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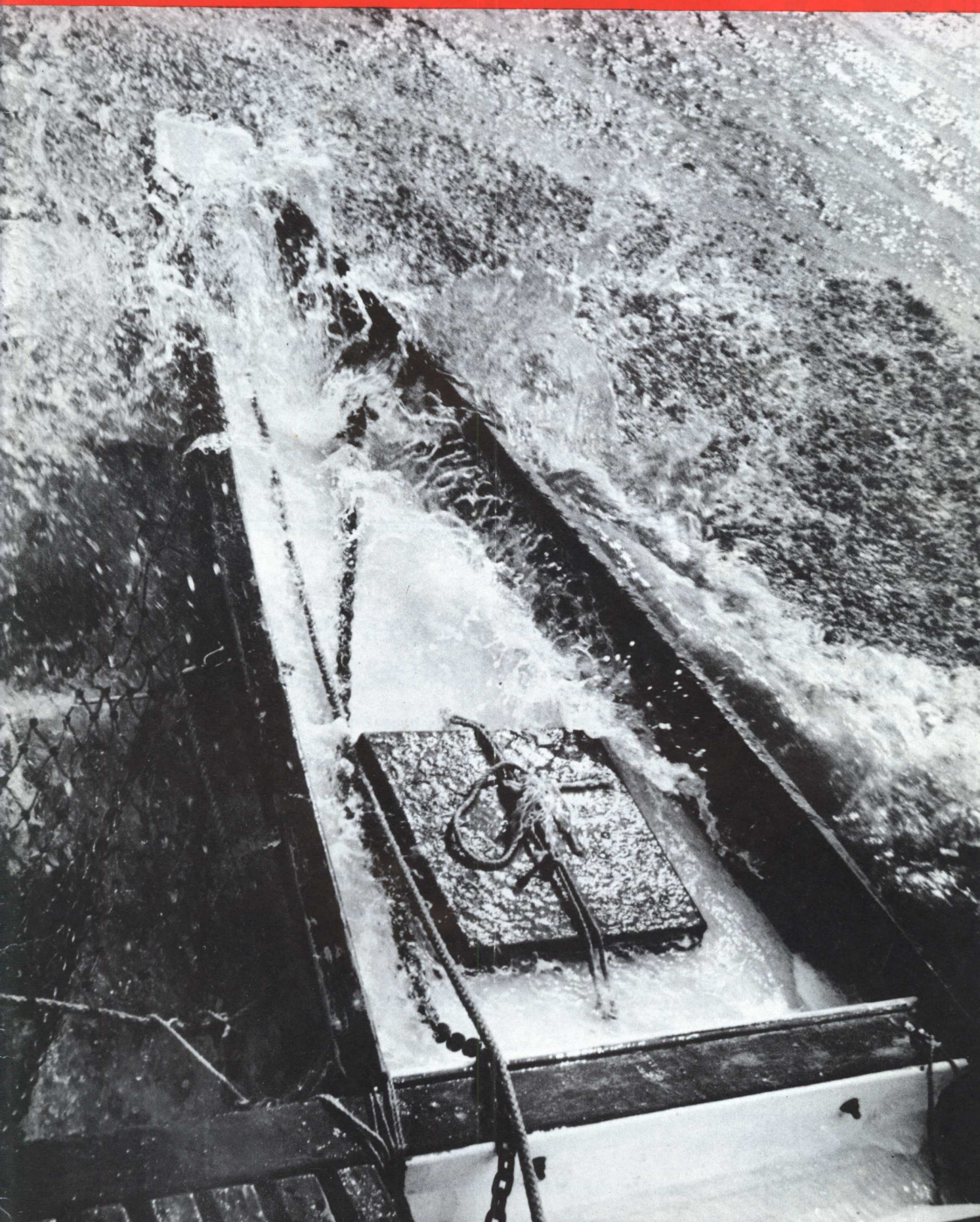
THE SAILORMAN

June 1978



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THE SAILORMAN

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A word in your ear

Catamaran discrimination! Marina and harbour dues are a rip-off! This may sound like sensational journalism, but "they" make us pay for the privilege of owning our cats. Let me plead my case.

Here is an example. Hinemoa's and Hirondelle's have very similar dimensions, i.e. length and breadth, which coincidentally are very similar to some ¼ tonners. Now at Ramsgate Marina during Thanet Week last summer, I paid for my 23′ Hinemoa plus 50% for being a cat. I am prepared to pay my way, but do object to being robbed. Actually a ¼ tonner takes up more water than a Hinemoa or Hirondelle. The cats. draw no more than 1—1½′ while the ¼ tonner draws 4—5′. The cats. could easily be berthed in shallower water and be out of harm's way from the deeper draughed and heavier boats.

Take a hypothetical case, though there is a lot of truth to it. An average sort of length to beam ratio of a keelboat might be 3:1. Suppose for my 23′ Hinemoa, I get charged 2p per foot per day in a harbour or marina. My beam is a little over 10′. Suppose there is a 30′ keel boat (with a similar beam) berthed ahead of me. He is charged the same rate as I am, but I get charged 50% more for being a catamaran. Now we both have the same beam, but he is 7′ longer. He pays 60p a day while I pay 69p a day, yet I actually take up less space than he does — about 23% less!! He also needs deeper water in which to float.

Apparently a keelboat might just as well be a piece of string 30′ long at 2p foot. The point is that keel boats pay for LENGTH while our catamarans pay for AREA. All mono hulls I've ever seen, and I've sailed a few, have some degree of breadth. I am not suggesting that mono-hulls should pay more, rather that catamarans should pay a little less.

One final point — about harbours, marina's, boat-yards and other such places where there are tidal mud flats. These places are of no value to keelboats and should be made available to catamarans at the standard rate.

SHEATHING METHODS AND MATERIALS

At the PCA AGM there was a lot of discussion about sheathing. I would be most grateful if members would be kind enough to send information on this subject so that an informative article can be compiled, or send in your own articles.

Happy sailing in '78,

Richard Bumpus

Jim's Column

Robin Fautley, PCA Secretary interviewed James Wharram at the London Boat Show in January. Here are extracts from that interview:

RGF Did you enjoy the PCA AGM on 7th January 1978?

JW I enjoyed it with a feeling of pride as I've watched the PCA grow in strength over the years, and this year I felt the PCA was maturing. The Committee had obviously done their homework and the members were prepared to sit down and listen and take a deep intelligent interest in what was going on, get through the business quickly and then get on to enjoying themselves. I felt that this year the PCA had at last realised their technical skill in sailing, their abilities in club organisation, and the part they can play in the multihull world as a moderating influence showing what a cruising offshore catamaran can do.

RGF What was the most noteworthy thing for you at the AGM?

JW The most noteworthy thing was the trust the members gave the Committee. Now, in the past, the PCA members have always been very vocal, so it isn't a weak audience. The members were highly interested. It was clear that they thought the Committee was doing a good job and they were prepared to back it all the way. When the former Treasurer put forward the idea that the PCA should try and raise £3000 to produce a book of former Sailorman articles, there was no carping criticism – it was a case of trusting the Committee to get on and do it.

RGF Both the Pahi range (31', 35', 42') and the 31' proa, your new designs appear to be quite a departure from the traditional Wharram type Vcross section hull. Would you like to explain the reason for this apparent change.

JW I love shapes and have wanted to make a new shape for some time. The new shapes have a soft rounded V. a more feminine look, when compared to the straight V which have a sterner look and a clean crispness. The old designs use a lot of wood – they were designed when wood was cheap. The new designs use less wood and have a simpler building method. The bulkheads are not framed, they butt up to the plywood hull skin and are joined to it with fibreglass tape, rather like a Mirror dinghy. We have tried to put into the offshore Cruiser the simple fibre glass wood construction technique that has been used in the dinghy world for years. The new boats will be proportionately cheaper to build because they have less wood in them, but they are not better than the other designs because the final shape of the boat is an artistic thing. As described the Pahi range will be available in plywood.

RGF Do you agree with the amendments – the constructive alternatives put forward by Mike Briggs on behalf of the PCA to the Multihull Offshore Cruising and Racing Associations (MOCRA) safety regulations?

JW Yes. The PCA have drawn up a very sensible document. The *original* MOCRA safety regulations accepted the fact that capsize was inevitable and frequent. I do not believe that an offshore multihull should accept as a fundamental principle of its design, that capsize is going to be frequent and that it is to be expected. A multihull is a non-self righting vessel, just like a Thames barge, a coaster, a junk, cargo ships, i.e. the majority of craft on the surface of the sea are non-self righting. The PCA have said capsize is not inevitable and therefore we must encourage design that will not capsize. MOCRA have recognised the PCA part in amending the regulations (Ed.)

RGF Your article "The Stable Multihull" in the September 1977 issue of Yachts and Yachting has caused considerable debate in the offshore multihull world. You got a great deal of support for your article from the correspondence, although some did not agree with your views about the double outrigger trimaran. Would you like to comment?

JW The development of the double outrigger trimaran is a product of the OSTAR and Round Britain Race. In the Pacific this craft does not exist as an offshore craft, only a lagoon craft. The idea of the modern development 'built-in heel' is always out of the sea, giving minimum wetted surface. It has stability and has shown itself to have a bad safety record. We explained our theories to the other designers at the Toronto Multihull Symposium

RGF AS you know insurance has been difficult to obtain for multihulls andnot only for the home builder. How do you suggest we overcome this?

JW I think we need a Cruising Multihull Association – a group of designers with good reputations for stability. Then we can go to Lloyds as representatives of cruising multihulls and produce data as shown in my article "The Stable Multihull". Insurers don't want to lose money.

RGF The PCA has actually considered setting up an investigation into capsize and safety statistics to present to Lloyds and other insurance companies.

JW I did this some years ago and insurance became easier.

RGF Hopefully this will be the case in 1978. There are many Polycats all over the world. Have you any idea how many have been built and are sailing and how many are under construction at present?

JW No idea, though we have sold 4,000 sets of plans.

RGF You have recently taken a seventh member into James Wharram Associates. Besides Patricia Warren's natural charms how did she come to join the firm?

JW She has come in to organise the office we have in Ireland, and is responsible for all the correspondence.

The Sailorman

RGF The size of the PCA and JWA has grown enormously in recent years. Are there any messages for your builders that you might like to give on a personal level.

JW We have not got big-headed and are just as interested as always, but the difficulty is just the volume of people. For example – if you have a good steak, that's fine, you might be able to eat another but not any more after that. It is the same with people. Because people stimulate and excite me, the girls have tended to put a barrier between me and people in order to keep me working hard. It is wonderful when someone comes and says "I've just sailed the Atlantic on one of your boats". Really I should sit down with him and enjoy listening to and discuss what he has experienced, because we designed the boats for just that. It hurts me that I don't have the time to do so.

RGF What sort of questions concerning construction are you asked most often?

JW There are several we get asked again and again. One – how many screws or nails in the boats? We have worked out and supply lists of fastenings for some of our boats, but even then, people put not exactly the same number of nails (screws) in and forget the one that fall on the floor or get stuck in cracks. Another question is about engines. Our designs are basically sailing boats. However, the PCA has produced some good information in THE SAILORMAN about this. A further question is about self steering and in my opinion any gear will work well on the cats., and the simplest (and cheapest) method is **our** self steering sail as described in the December 1975 edition of THE SAILORMAN. Roger Knight crossed the Atlantic twice in his Tangaroa singlehanded and steered for a total of 30 hours out of a total of 11,000 miles. He used a QME gear – this did not work on TEHINI as she was too big and fast. Another question we get asked is where to put the sheet leads and blocks on the deck. The reason they are not precisely defined in the plans is that every sail maker makes his sails slightly differently. We don't say you must get sails from A or B but we have found that Jeckells, who have sailplans of all our designs, have made a great many of the sails for our catamarans very satisfactorily. Austin Farrar Sailmakers are also interested in making these sails. This is where the STF will come in, that builders can see very well laid out deck plans and learn the reasons behind it. Further questions we are often asked are: types and grades of ply and timber; sheathing methods – polyester resin and glass, resorcinol glue and nylon, epoxy and glass cloth, WEST system etc.; alterations – raising deck level, increasing height of cabin tops etc.; making wooden masts; where to start planking? (Many of these questions have been answered in the 'Building Instructions' and on the plans). We are also asked about different rigs: we could provide each design with 10 different rigs, and people would still like to know about another rig, and about building in steel or aluminium.

RGF What plans for the future?

JW I would like to sail around the world in easy stages. I want to get back to sea again. I'd like to build a boat, get friends to sail it to the West Indies and then fly out, have two months holiday on it, sail to Florida and sell it. We'd then have another boat which we'd ship out to the Panama Canal, fly out and have a holiday while sailing to Hawaii to sell to a customer. I'd like to sail all over the world on that principle. It is great to leave a land behind and then sometime later see a new land again.

RGF I hope you have had a good Boat Show this year. You've had the Scottish Pipers come to your stand and do the Highland Fling. I hope you've enjoyed yourself.

JW Yes, I did, and I must thank the PCA for their help.

Association News

PCA

As you will have seen from your mini Sailorman, Paul Thompson is the area secretary for the west coast of N. America. He writes to say that Harold Goddard and family are cruising the south Pacific and the last word heard was that they had reached Samoa and will probably head for New Zealand.

PIGGY, the Ariki cutter built by Tom and Don Hembroff in 1972 in Vancouver was in the West Indies the last we heard, and very close to circumnavigation. The Hembroffs are to sail her back to the Pacific. As far as we know, she will be the first Polynesian catamaran to circumnavigate.

Arne and Flora Baartz of Victoria BC are readying their modified Oro THREE WATERS for a projected long Pacific cruise this summer.

Fred and Kerry Howard are building a Tangaroa in Jarmans Boatyard at Conyer, Kent, UK. They are from Australia and look forward to returning to the islands off Brisbane. They hope to launch early this summer, and I'm sure they are awaiting launching day as they were flooded out of their building shed many times by high spring tides this winter.

John and Diane Edwards are refitting their Tangoroa in the same yard, and hope to head south for warmer climes this summer.

John Fairhurst's well fitted out Tehini MAHINUI moors up at Jarman's too. John has plans to sail to the Azores this summer.

Robin Fautley sent me a cutting from the Southern Echo, Jan. '78, which describes Shaun Blachford's epic voyage from Southampton, UK, to New Zealand in his Tane TAANYA. Apparently 33 year old Shaun had a very stormy trip across the Pacific, and then made the front page of the New Zealand newspaper 'Northern

PCA

Advocate' soon after arrival. It seems he was stabbed by muggers in Panama, attacked by a giant ray, dismasted twice and battered by hurricanes – some trip! He plans to return presumably to the UK via the Suez Canal.

A note from the secretary:

'It has been suggested theat the Committee prepare pilotage information to be made available to the members. Would P.C.A. members with local knowledge of their sailing grounds which would be of use to Polynesian Catamarans with their shallow draft, please draw up a rough sketch chart or charts of their areas together with any interesting or useful notes (see notes on the Isle of Scilly – December 1976). The idea is that these notes can be sent to a registry of 'Polycat Pilotage' and when another member is planning a voyage in such an area, he will be able to obtain a copy of the notes for that area from the registry.'

CRUISING CATAMARANS

If you want a survey on the catamarans sailing about today, the AYRS has published a book called Cruising Catamarans. It deals with the development of the catamaran. It makes very interesting reading, and contains about 25 pages on Jim's writings, theories and drawings. I found the book hard to put down. In conclusion the book says about Wharram rigs amongst many other things, that "the spritsail is poor and the junk rig atrocious". Jim in true AYRS spirit has pioneered with the junk rig and written quite a bit about it in various magazines. He concludes that its aero dynamics are unsuitable for cats. The sprit rig, however, I use on a Hinemoa, I find it a fun rig. Off the wind the sail will develop more power per square foot than the same size high aspect Bermudan sail. On the wind it goes surprisingly well, and has surprised many a Bermudan rigged sailor. I speak only for small Polycats.

We had a short communication from Jim Brown, Searunner trimaran designer. His address is . . . PO Box 14, NORTH, Va.23128, USA. The facility on the southern Chesapeake specialises in new multihull designs incorporating new safety concepts owner-builder construction methods, and seastead cruising technology. Searunner Trimarans now provide a multihull survey service, protected winter moorings, and builder-buyer-seeler-sailor contacts. Jim also enclosed a brochure describing "the multihull tow-over". It describes the righting of a Searunner using a tow rope, after capsize.

Ted Berry of Invercargill, NZ, appears to be having good sailing on his Ariki, and reckons that she will clean up all but the largest boats off the wind. Ted says that a Raka from Auckland will be entering the Trans Tasman race. How about some cruising stories about the beautiful New Zealand coast??? While on holiday in Hauraki Gulf, Ted came across a Tehini, two Narais, two Tangoroas and a Raka. (The Polycat spirit is all about. Amen. Ed.)

The Secretary tells me that many New Zealand members have had problems getting their Sailorman. John Carmichael of Parnell, Auckland, mentions that the NZ post can be a bit erratic. The NZ Consumers Institute might be able to help if you contact them.

EXCHANGE AND MART.

In response to requests and discussions held at the AGM and proposal number 3 item 1, about special assistance for the secretary, Bob Evans has agreed to take on the work of maintaining a register and start up a bulk buying scheme. The problem in the past about the small ads. in the Sailorman is the time between receipt of the advertisement from the member to the date of publication. With such possible lengths of time, the items advertised have often been sold (or bought) through another medium. The following will speed up the process of putting buyer in touch with seller:

1. **Selling** Prepare as full a description of the boat, equipment etc. location of goods, on a sheet of paper, very clearly written or typed. Make as many photocopies or carbon copies as you feel suitable and send them to the P.C.A. for the attention of Bob Evans.
2. **Buying** Advise the register of the boat or equipment, materials etc. required and enclose a large stamped addressed envelope. Bob can then enclose one of the copies from each of the vendors description sheets mentioned above which has details of items you require.

You are invited to use this facility but please remember to be as thoughtful for the person running the scheme if it is to be successful and operate smoothly. For example, when you have made your sale or purchase, do advise the register of the fact so that no unnecessary further details are sent out. This would otherwise frustrate the prospective vendors and purchasers.

The North East Polynesian Catamaran Association (NEPCA) i.e. North East area of England, has been established and is open to anyone who is a member of the P.C.A. NEPCA has its own constitution and holds meetings on the first Sunday of each even numbered month (i.e. Feb., April, etc.) The Secretary is Pete Jezzard, 77 West Street, Normanby, Middlesbrough, Cleveland TS6 0LH.

A certain well known member called Joe Bloggs never sent in his renewal subscription. Even if he did, the Secretary never received it. And besides, there was no cheque in the envelope. Even if there were, we don't accept I.O.U.'s. Anyhow the members list went out last week. Not only that, but our records show Joe Bloggs has never really been a fully paid up member.

Tony Meakin tells us that multihulls are welcome to lay-up at Wicormarine Ltd., Cranleigh Road, Portchester, Fareham, Hants. They produce comprehensive details of terms of business which they will send you on request.

PCA

Dear Sir, I edite a glossy yacht magazine. My boat was passed by a Polycat. Not only was it full of gorgeous girls and booze but nobody saluted the flag on the stern of my yacht or answered my nod.

Signed. Disgusted.

●

Dear Disgusted, I distinctly remember holding up two fingers in reply to your nod.

Richard Pendred (Racing Secretary of MOCRA) writes to draw our attention to the Crystal Trophy and MOCRA Channel Race on the 23rd June, 1978. Any U.K. Polycat members who are interested in racing should contact him at the following address: 38 Lakeside, Wickham Road, Beckenham, Kent. Telephone 01-650-4686. PY numbers are required for racing.

Tehini Caribbean Charters

TEHINI is going barefoot chartering in the West Indies from December '78 on. Come and sail in the tropical trade winds, enjoy sun, palm trees and steel bands.

There are still vacancies for the voyage from Ireland to the Canaries via the Azores, leaving August, and for the adventurous Atlantic crossing, leaving Las Palmas for the West Indies in November '78.

Any interested in joining (appr. cost Ireland Canaries £200, Canaries West Indies £300), please write to:

James Wharram Associates, Killowen, New Ross, Co. Wexford, S. Ireland.

SUMMER MEETINGS

Refer to your mini Sailorman for UK, Netherlands and American meetings.

REPORT ON THE R.Y.A. CRUISING SYMPOSIUM WITH SPECIAL REFERENCE TO MULTIHULLS

By R.G. Fautley

There was a discussion and lecture series of interest to all cruising yachtsmen incorporating Fire and safety precautions, use of flares by a representative of Pains Wessex/Schermuly, radio transmitters and their use for small craft, and a film on the role of the Coast Guard in relation to the Yachtsmen. Of more particular interest to PCA members was the discussion forum on multihulls led by James Wharram and Derek Kelsall.

Jim commenced this group discussion by bringing the attention of those present to the advantages of cruising multihulls. Most of these assets are well known to PCA members: Shallow draft, easier to build, more comfort due to the cruising person due to the lack of heel and subsequent larger usable space below decks for internal volume, lower cost in relation to heavy displacement lead swingers etc. Jim then compared these advantages in terms of 40' Offshore Monohull craft which tend to cost about £53,000 and the more conventional 30' Catamarans which, professionally built are in the price range of £15,000 to £28,000.

The subject of safety and stability were next raised and the attention of the differences between the cruising and racing multihulls were emphasized. In particular, the lightly built racing double outrigger trimarans were focused upon both for wind and wave stability. Some of these racing craft had no more than dinghy stability since their sail areas were so large, that they required vigilant attention at all times and, in his opinion, unsuited to offshore cruising, especially when short-handed or sailing with novices, or members of the family which so many cruising people sail with.

Capsizes had brought adverse publicity to offshore multihulls whether they were of the racing or cruising variety, although the vast majority of accidents had been caused by the few racing craft. The question of insurance companies high rates and loadings having been caused by these well-publicised tragedies was mentioned. The most worrying attribute of some of these racing craft was capsize due to wave. At least the sails could be taken off in an overcanvassed craft but escape from heavy seas and breaking waves was an impossibility. Cruising multihullers should take a very careful look at this type of possibility when sailing the modern, double-outrigger racing trimaran.

Derek Kelsall although he has designed a few catamarans was primarily speaking on behalf of the Trimarans. He did indicate some of the disadvantages of them as compared with catamarans although the main advantage of the Tri. was the extra speed possible due to less wetted area and lighter structure. That was the main reason for Tris being so high up in the race results although numerically there are so few of them taking part. One of the big problems with multihulls was that so little money is available for the research necessary into the structures of the craft. He was working with aircraft type structures without having the resources necessary to experiment and so each of the racing designs in which saving weight is such a vital matter becomes in itself an experiment. Blame for structural failure in such projects becomes almost inevitable since there is always an unknown element. If he were to go on a long ocean cruise, he would personally opt for a large 50' Catamaran, but for racing, it would be the Trimaran. But Derek Kelsall points out that the racing Tris, like 53' Three Legs of Mann II did make ideal cruising boats and that there is little to compare with the thrill of retaining most of the speed of such a craft and sailing in a safe and seamanlike manner by taking no chances (unlike when racing). Jim was asked what views that he originally had he now felt differently about. This turned out to be the bridge deck cabin. Several good designers had been able to show that a properly designed and built deck cabined catamaran was seaworthy.

PCA

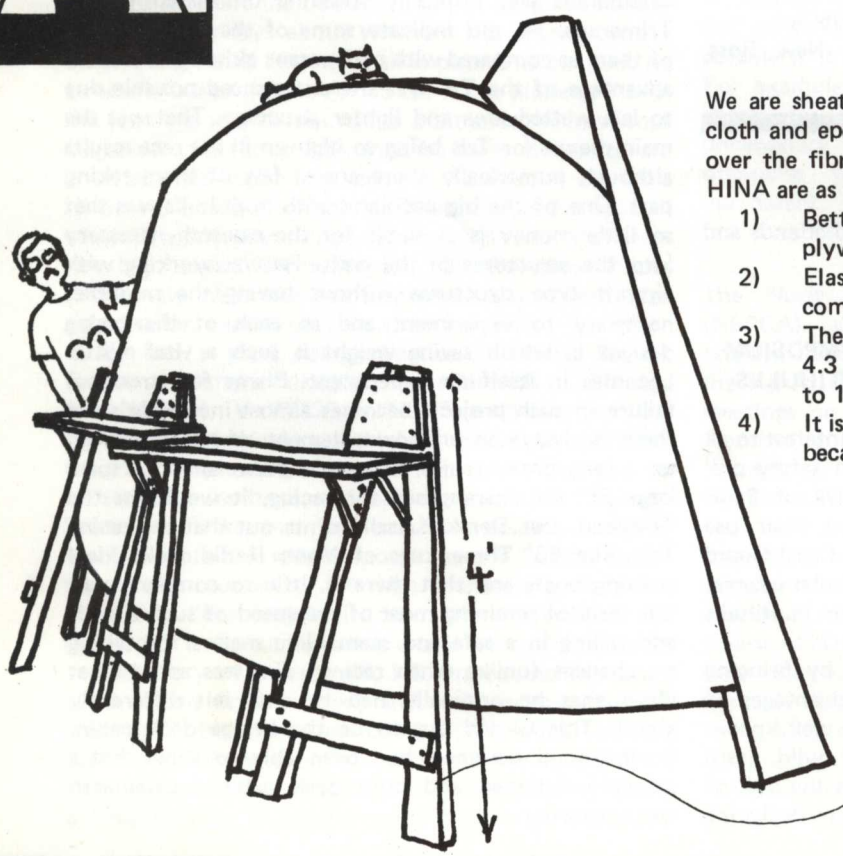
He still felt that without the bridge deck cabin, the boat could be kept at a reasonable cost for amateur builders and cited the example of Roger Knight who built a 34' Tangaroa for under £2,000, sailed single-handed across the Atlantic and back and then sold the boat for £5,000. It would have been impossible to have done this using one of the other designs for two or three times that money in a seaworthy and large enough craft.

The floor was then thrown open to questions and the topics which did rise included shallow draft pilotage, and excessive harbour and mooring charges. John Durie, the R.Y.As Secretary General, was asked why the R.Y.A. had not made any representations on behalf of the multihullers about harbour charges excess on catamarans and trimarans. It would appear that no requests had been received by the R.Y.A. from the multihull associations since he became Secretary General. The R.Y.A. can only represent the views put to it by its members and it was suggested that the 'Multihull associations did some homework and put together some ideas about how the problem could be tackled. (Members of P.C.A./MOCRA are requested to advise the committee of the situation prevailing locally so that the extent of the problem is known. A soundly based argument backed up with the facts and figures of the case can be made to the R.Y.A. who will be only too happy to represent these views to the relevant authorities. Without a united cooperative effort, it would not be possible to obtain any satisfactory conclusion to the representation.)

Insurance – It is requested that owners (and those still building with builders insurance cover) provide details of their policies showing name of company, cover given, previous experience taken into account by the Insurance Companies, premiums charged and any special clauses restrictions and items which would be of use for multihullers. It would seem that many insurance companies will not insure multihulls because of their poor safety record. This safety record has been tarnished by a few well publicised capsizes and structural failures of racing machines and due to the inability of the insurance companies to differentiate between the racing boats and cruising multihulls this has heavily loaded the safer cruisers premiums of the companies that still give cover to multihulls.

One company recently approached was of the opinion that the majority of the claims arose out of the inexperience of the skippers. This would appear to be a little doubtful as only 10% reduction was offered to owners possessing the R.Y.As yachtmasters certificate. If most claims arose out of inexperience, then the discount for those with experience should be much higher than 10%. So please pass on all the information so the true extent of the problem can be measured.

The Boatyard



USEFUL SCAFOLDING SUPPORTS FOR WORKING ON THE KEEL OF THE LARGER HULLS, MADE OF 2"X4" AND SCRAP PLYWOOD. MAKE SEVERAL

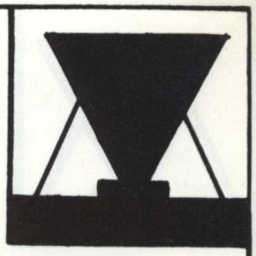
SHEATHING A NARAI

By Roly Huebsch

We are sheathing our NARAI MkII with polypropelene cloth and epoxy resin. The reasons we chose this system over the fibreglass and polyester resin we used on our HINA are as follows:

1) Better adhesion of the epoxy resin to fir plywood.
2) Elastically and flexibility of the cloth/resin combination.
3) The light weight of the polypropelene cloth, 4.3 oz polypropelene is equivalent in strength to 10 oz fibreglass.
4) It is easier to apply to compound curves because of it's elasticity.

The Sailorman



Our HINA has stood up pretty well over eight years with only minor sheathing problems. One area of difficulty is around the rudder fastenings on the skeg, where the strain and flexing has caused cracks in the glass. Once water penetrates it can cause lifting of the skin over a considerable area. As our NARAI is intended for more severe ocean service as well as being our home for a while, we decided to go for the best.

We used Chem-Tech sheathing resin as we had already been using their epoxy adhesive. People I have spoken to have said that the WEST resin is a little easier to apply as it is a little less viscous. Although Chem-Tech resin will cure down to 5°C, application should only be attempted when the internal temperature of the wood is over 20°C in order to get good penetration of the resin.

We were told initially that polypropelene is applied just like fibreglass. We found that this is not strictly true, in fact our first two test applications on small areas were failures. It might prove helpful if I explain what went wrong.

On the first attempt we stapled the fabric in position and then rolled on a heavy coat of resin. The low specific gravity of the cloth defeated us here. The fabric floated on the resin giving a remarkable undulating finish. I did more reading on the subject and found the suggestion that I should first roll on a coat of resin, let it get tacky, and then spread the cloth over it. When the resin cures then roll on a soaking coat of resin. The failure this time was caused by the physical stress and strain of rolling on the viscous soak coat broke the tenuous bond between the fabric and the hull again allowing it to float. Our final solution, a compromise between the two methods will be found in the detailed description below.

The manufacturers describe a lap joint between adjacent panels, recommending that the first panel be allowed to cure, sanding it to a feather edge, and then applying the second. This takes a lot of time and a butt joint is easy to make tight and is perfectly satisfactory. Sanding polypropelene is not easy, coarse sandpaper just grinds away the resin and combs the fibers of the cloth into a nice pile rug effect. Only very fine sandpaper will cut the fibres and even this is not entirely satisfactory, so wherever possible we tried to eliminate sanding by careful fitting and application of the panels.

I personally detest using sticky messy chemicals, I could never build a boat in foam sandwich. I had hoped that polypropelene and epoxy would be less distasteful, it wasn't. It's only advantage is that the polypropelene dust is not itchy!

Here is how we tackled the whole job, step by step.

First the whole fir plywood hull was sanded using coarse sandpaper on a belt sander. This scores the surface of the plywood permitting better penetration of the resin as well as levelling slight discrepancies at the joints in the plywood. Then choosing a nice warm day and waiting until noon when the whole hull had warmed up we rolled on a coat of resin thinned 15% with toluene. Once this had cured we went over the whole hull filling nail holes (where the nails had been slightly set down) and other surface defects with Chem-Tech surfacing compound. (Contrary to the manufacturers description this compound *can* sag on the steep sides of a Polycat, so for filling any larger defects it should be thickened with Cabosil or Microballoons). This was allowed to cure and then sanded. The reason we put on the penetrating coat of resin *before* filling the surface was so that the resin could penetrate below defects and around nails in areas where it would otherwise be kept out by the filler.

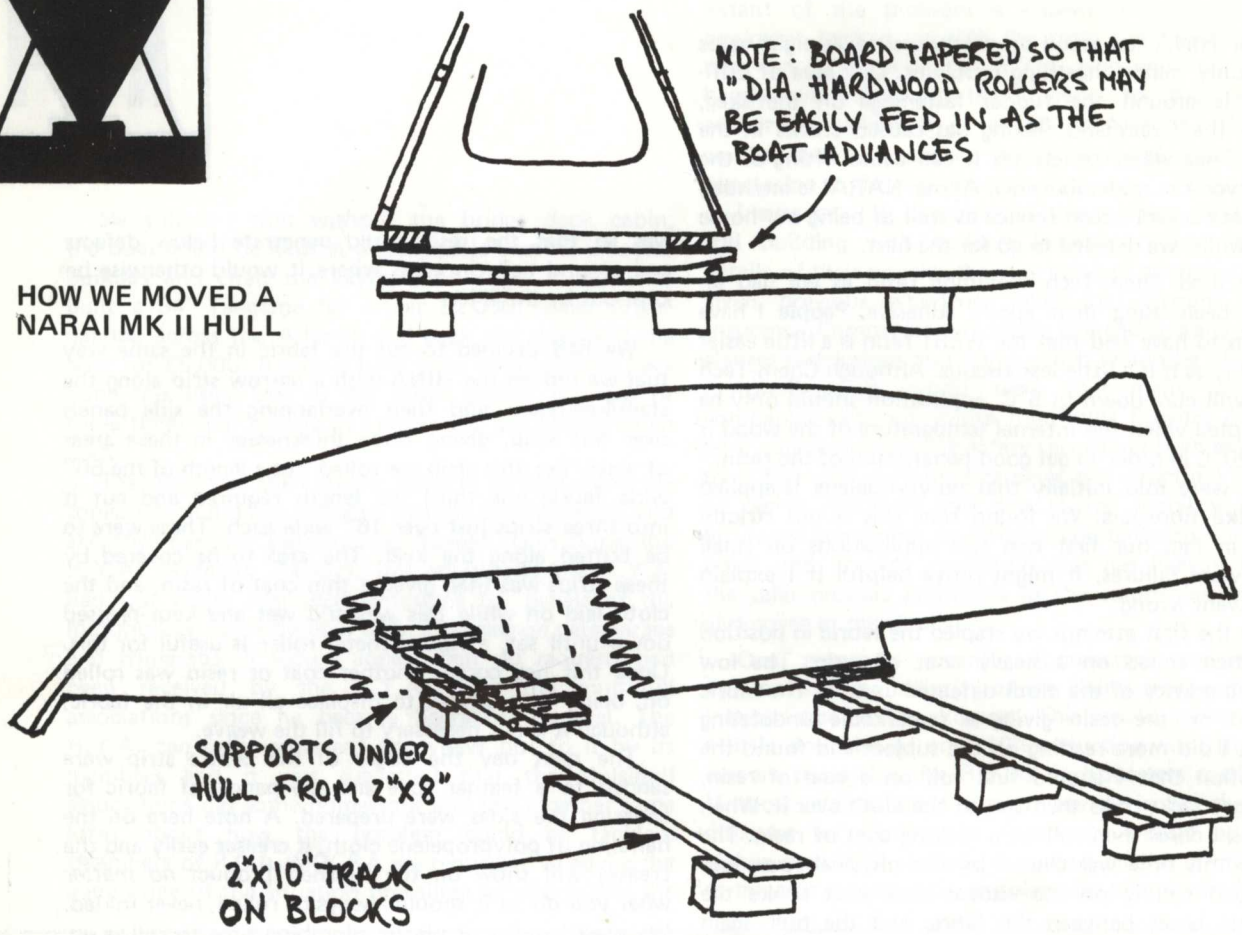
We had decided to cut the fabric in the same way that we did on the HINA with a narrow strip along the stem/keel/stern and then overlapping the side panels over this strip, giving three thicknesses in these areas of wear. For this strip we rolled out a length of the 50" wide fabric one third the length required and cut it into three strips just over 16" wide each. These were to be butted along the keel. The area to be covered by these strips was then given a thin coat of resin, and the cloth laid on while this was still wet and kept pressed down until set, a ribbed metal roller is useful for this. Once this has cured, another coat or resin was rolled on, being very careful to displace all air in the fabric, although it is not necessary to fill the weave.

The next day the edges of the centre strip were sanded to a feather edge and the panels of fabric for covering the sides were prepared. A note here on the handling of polypropelene cloth; it creases easily and the creases will show on the finished product *no matter what you do* so it should always be rolled, never folded. We used lengths of plastic plumbing pipe to roll it on. Cardboard tubes would serve just as well.

We covered the sides with vertical pannels 50" wide butted together and each long enough to overlap the keel and run six inches down the other side. If you have a large enough crew to handle them full length horizontal panels could be used, but for shorthanded builders vertical panels are much easier to handle and the butt joints will be invisible when finished. The panels were applied using the same technique of laying them in wet resin described above. We found we could comfortably handle about one third of one side at a time without the resin starting to gel prematurely or any other ghastly occurances. Once the entire hull was covered in this way we allowed it to cure for several days and then sanded it lightly to remove careless insects etc. Then we went over the entire hull with surfacing compound, using a plastering trowel with a semi scraping action so that the compound would fill the weave but not cover the high spots. This compound sets rapidly so only a small area should be attempted at a time. The manufacturer says that a rubber squeegee can be used for this operation but I cannot see it being as good as a metal straight edge because of the stiffness of the mixture. After the surface had cured the whole hull was again sanded to give the final smooth finish and another thinned coat or resin was applied to cover any polypropelene or strands that might have been exposed by the sanding.

The hull was now ready for painting.

HOW WE MOVED A NARAI MK II HULL



★ ★ ★ ★ ★ ★ ★

SIMBAMYME
(A Flower From The Lord Of The Rings)
By Arthur Johns

I had toyed with the idea of building a hina/hinamoa since 1974 but it was not until December of 1976 that I sent away for the plans.

It took me two weeks of reading, sketching and a trip to the Wharram stand at the Boat Show before I had gained enough courage to transfer the lines drawing to hardboard. From then on, even with my limited skills and knowledge of boat building, the boat went together like a jigsaw, as long as you take your time and think about what you are doing, it really is simple.

I had constructed my hulls from exterior grade ply and so came the day when these had to be covered with Glass Fibre which, is the whole point for my writing this article. I hope it will be a help to others who are about to start this task or help the people who are undecided on using marine ply or WPB ply.

To start with, try to buy all your materials from the makers such as Strandglass or Bondglass-Voss. I went to the latter and the savings over the prices charged by chandlers are fantastic, e.g. Resin = Chandlers 1 gal. £8.40 Bonoglass 5 gal. £17.60

Similar savings on other items.

For the covering I used Woven Roving on the keel and covered this and the rest of the hulls with 1½ oz. chopped strandmatt. At this stage I would like to introduce PCA members to a Bondaglass-Voss product called G4 marine. This is a resin which does not require the addition of a catalyst hardener. It is activated by the moisture in the air. When it is applied to clean, dry wood, it greatly increases the adhesion between wood and GRP for boat skinning purposes. *Note* once painted into the wood, leave for ½ hour but complete that section within 4 hours of application. Used on the inside of the hulls it provides a waterproof seal to the wood. It dries to a light brown finish with a very, very tough finish and looks really nice with a couple of coats of varnish over it.

Before you start to glass fibre the hulls, it is wise to observe the following:-

a) Wear overall.
b) Use a hand cream and cover with rubber gloves, tucking the sleeves of the overalls into the gloves.
c) Use Nivea or some other such cream on the face as the resin tends to splash a little when it is rolled.
d) Wear some sort of eye protection when rollering.

It is also wise to have a couple of containers with lids containing Thinners (the lid stops evaporation). The thinners should be used frequently to clean the brushes and rollers and removing excess resin from the rubber gloves. Once the resin sets on the brushes or roller that is your lot – go and buy some more!

At the end of the day I found that the best thing to get the brushes etc. really clean after an initial wash in thinners is plenty of hot water and 'flash'. (The wonder floor cleaner advertised on T.V.). Three or four changes of water and flash ensure that the equipment is ready for the next time.

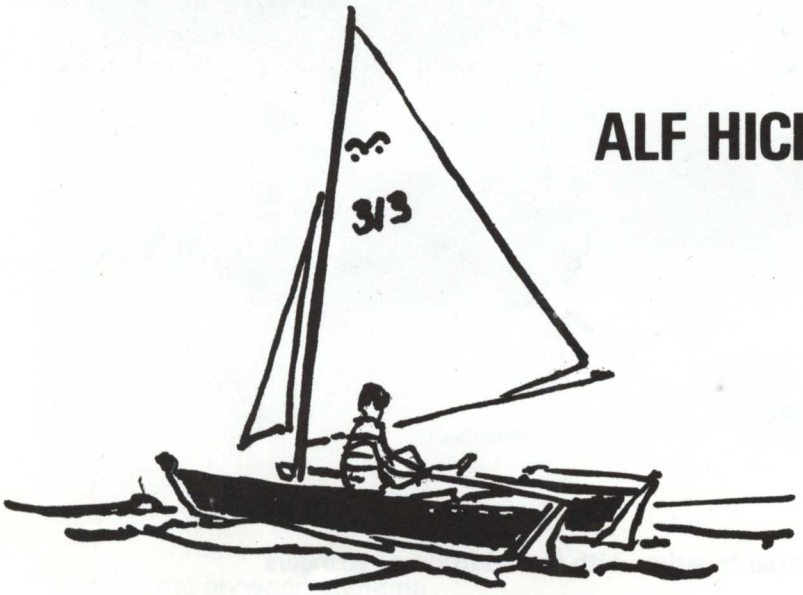
So let us proceed with the operation:-

1. Ensure that the hulls are clean and dry.
2. Rough up the woodwork and ply with course glass paper used lightly, or score the hull all over with knife or chisel.
3. If you are working out of doors try and arrange for some overhead cover to keep off direct sunlight or the resin will go off before you are halfway through rollering.
4. Apply a coat of G4 Marine to stem on a section of hull and keel approx. 12" past the stem on each side.
5. Mix resin and catalyst just before you apply it to the hull. I found that with a temperature of 50°F one pint resin to 4 cc of catalyst gave the best results but you must decide what is best for your working conditions. It is not wise to work below the 50° temp. mark, if you must work in lower temperatures than this, Bondaglass-Voss make a winter additive to help the situation. It is mixed in at the same time as the catalyst. Do not mix more resin than you require. I found 2½ pints covered a glass cloth width on each side of the hull and enough to stipple in.
6. Approx. ½ hour after the application of the G4 as in para 4, paint the same area with resin. Lay on the glass mat and roller all over with the steel roller until the glass mat takes on a wet look. Apply more resin to the cloth and roller again.
7. You can then continue to the keel and hull sides. On the keel a layer of glass woven cloth goes on first and after the second rollering, this is covered with glass mat and the mat is continued down to deck level each side of the hull.
8. Continue with this method until you reach skeg. Overlapping each joint by 2".
9. I overcame the awkward shape of the skeg by hiring for the day an industrial stapler with stainless steel staples. Using the roller and with liberal use of thestaples you can achieve a really snug fit, and the staples can be left in.

There you have it – it sounds easy on paper but that lot took me 7 hours. But the care time I took reflected in the finish.

To achieve a better finish than the rough texture glass fibre mat, it is necessary after a couple of days to cover the whole of the hull with a mixture of resin/ catalyst mixed with filler powder until it is fairly stiff and then painted onto the glass fibre. This can be painted on as thick as you like as the thicker it is, the easier the hull is to cut back before you reach the glass fibre itself.

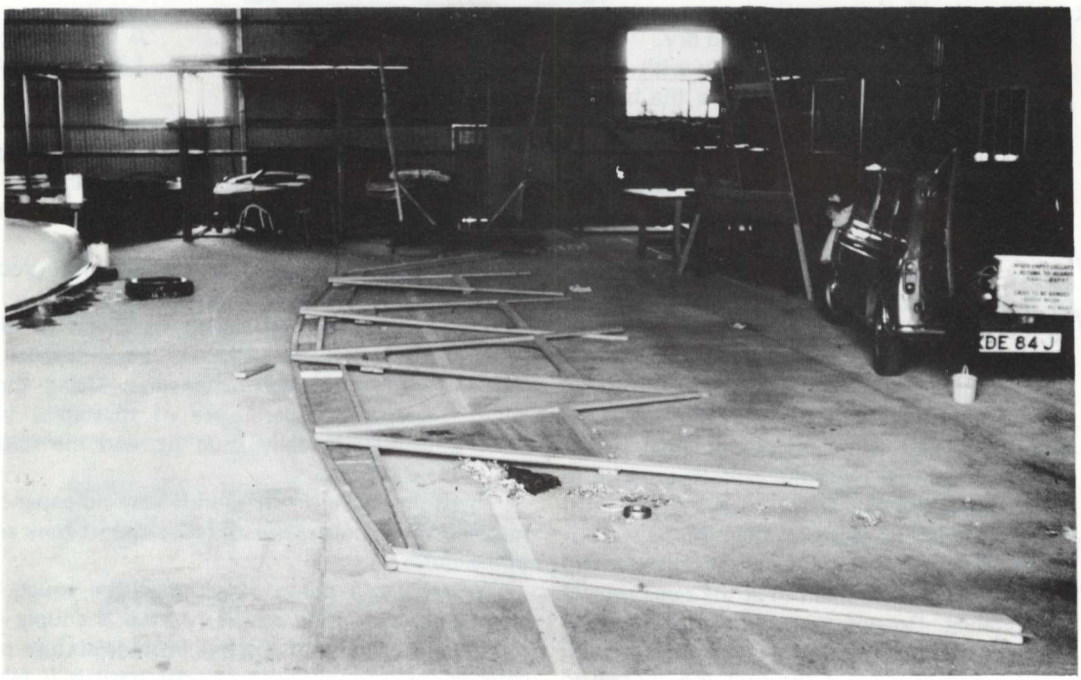
As a postscript to the above, I have now been informed that if you place a layer of thin glass tissue onto the matt and roller it in as part of the normal process, this results in a very good finish even without the filler paste being brushed on later.



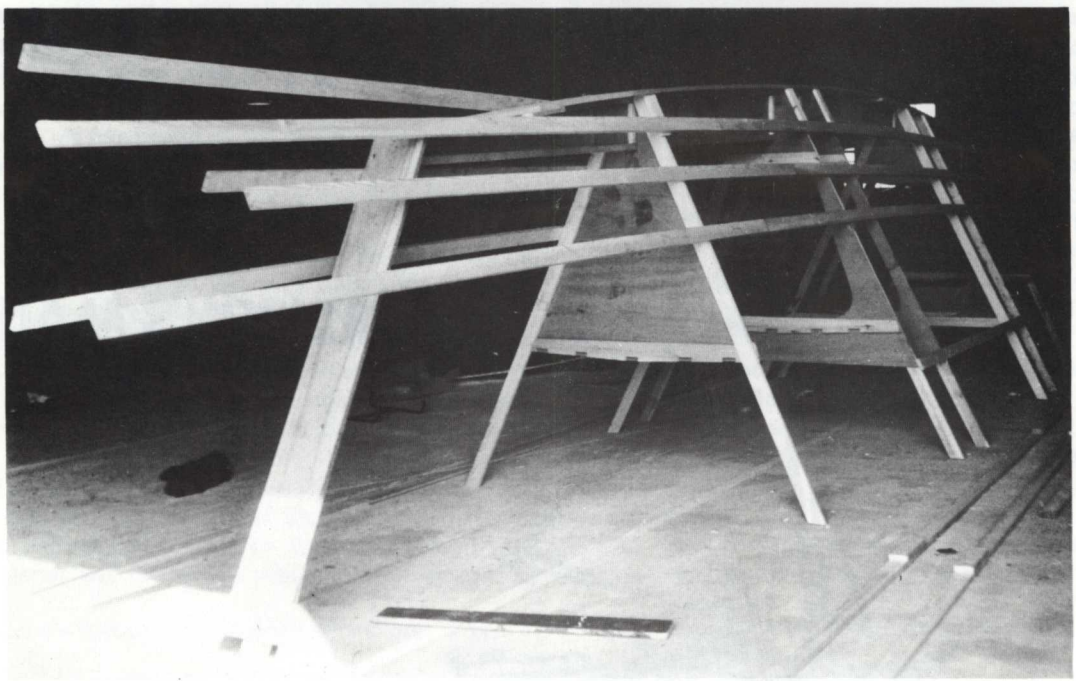
ALF HICKSON'S MAUI

PHOTOFEATURE
Building a NARAI MkII

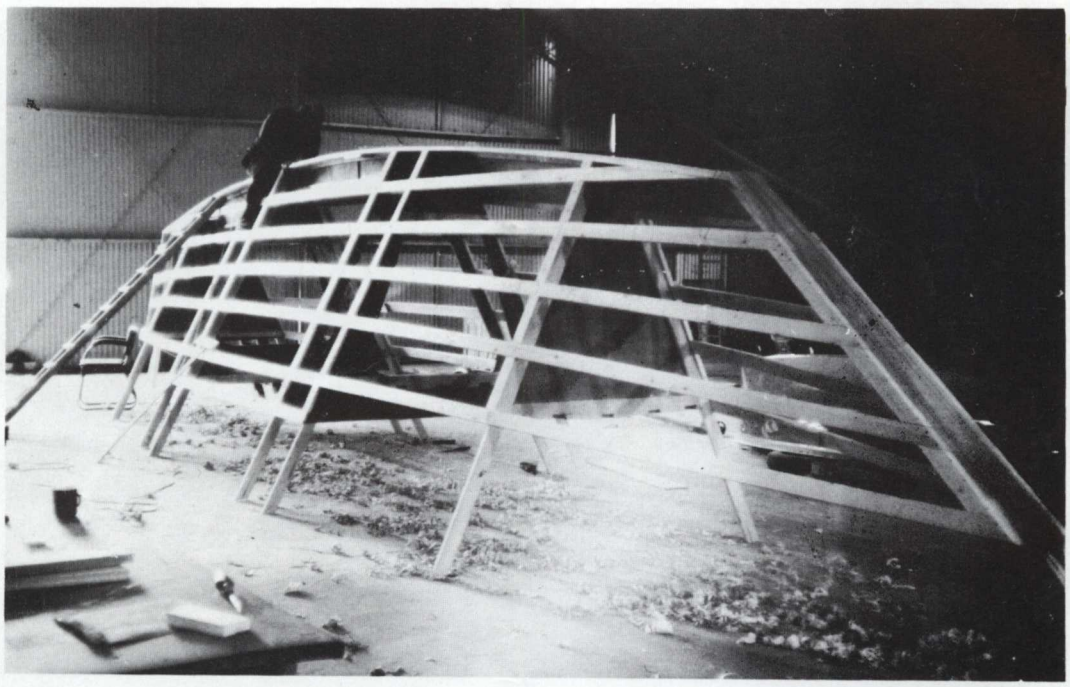
FRYGGA of CYMRU was built by Bob Evans



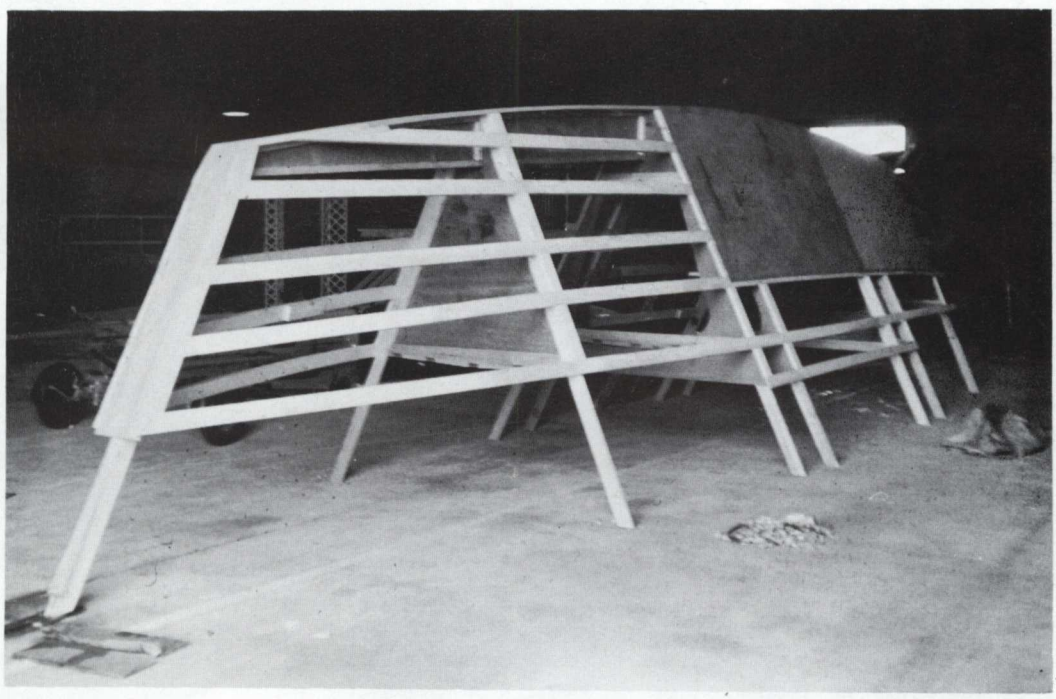
Preparation of backbone and frames, stem and stern posts



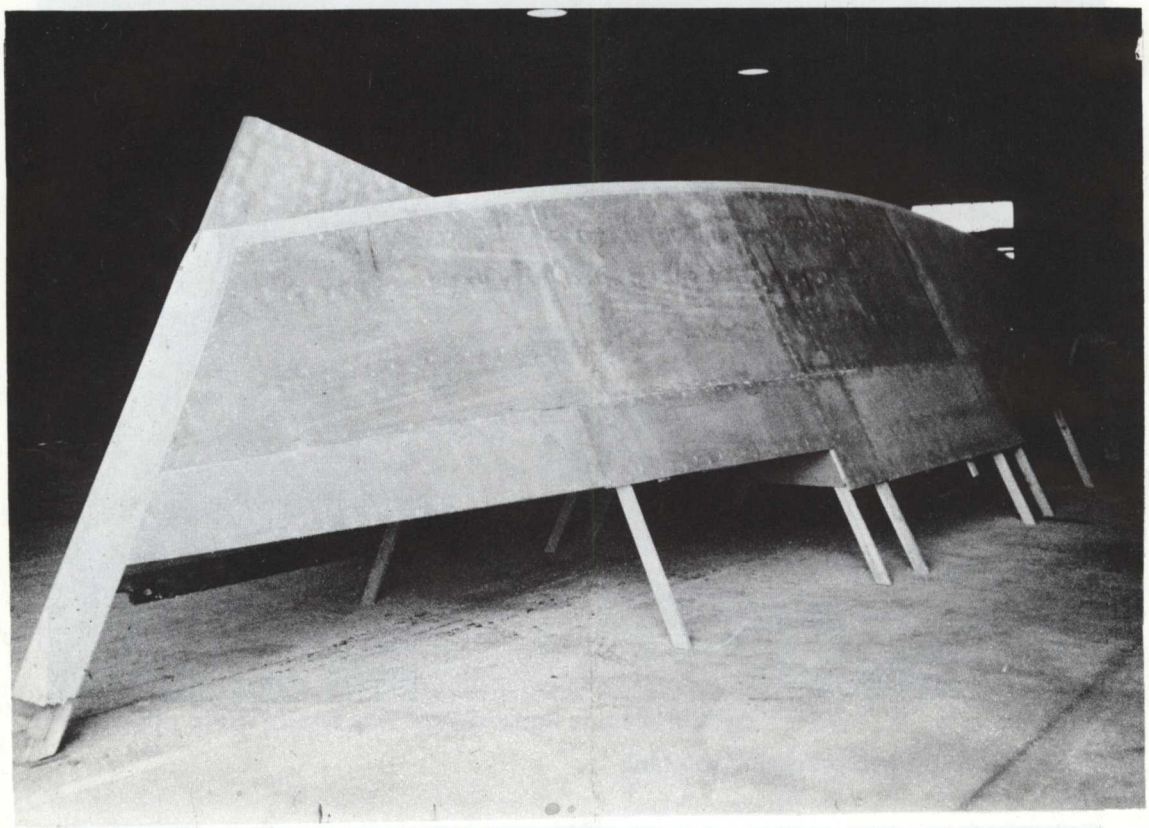
Backbone and frames slotted together with the addition of stringers



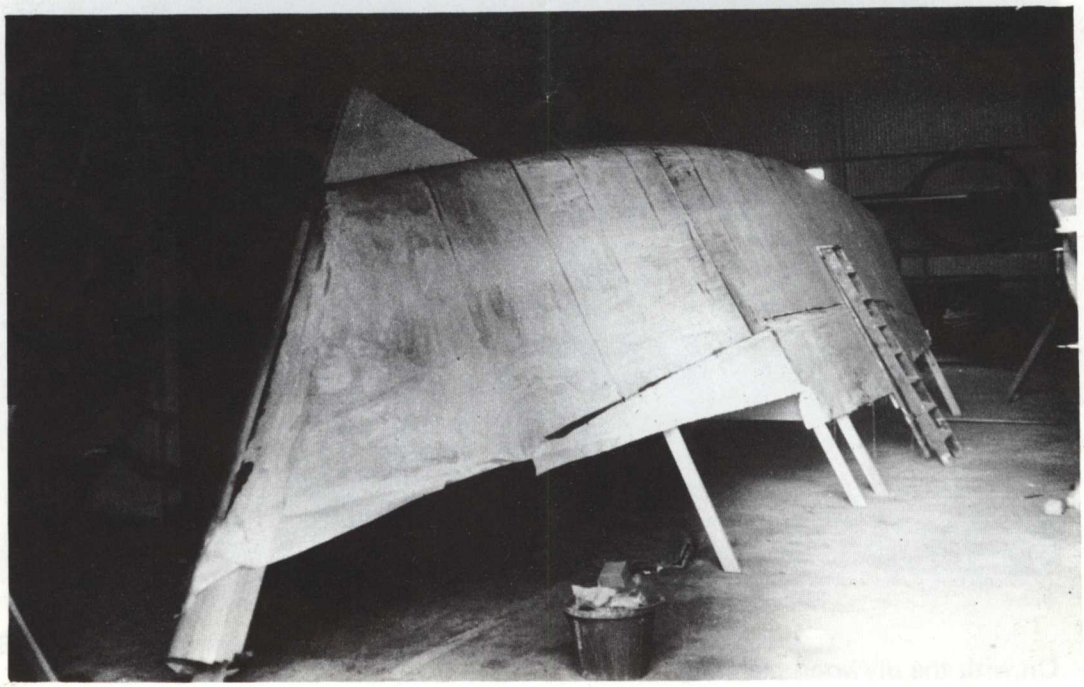
All stringered up and preparing to plank



On with the plywood planking

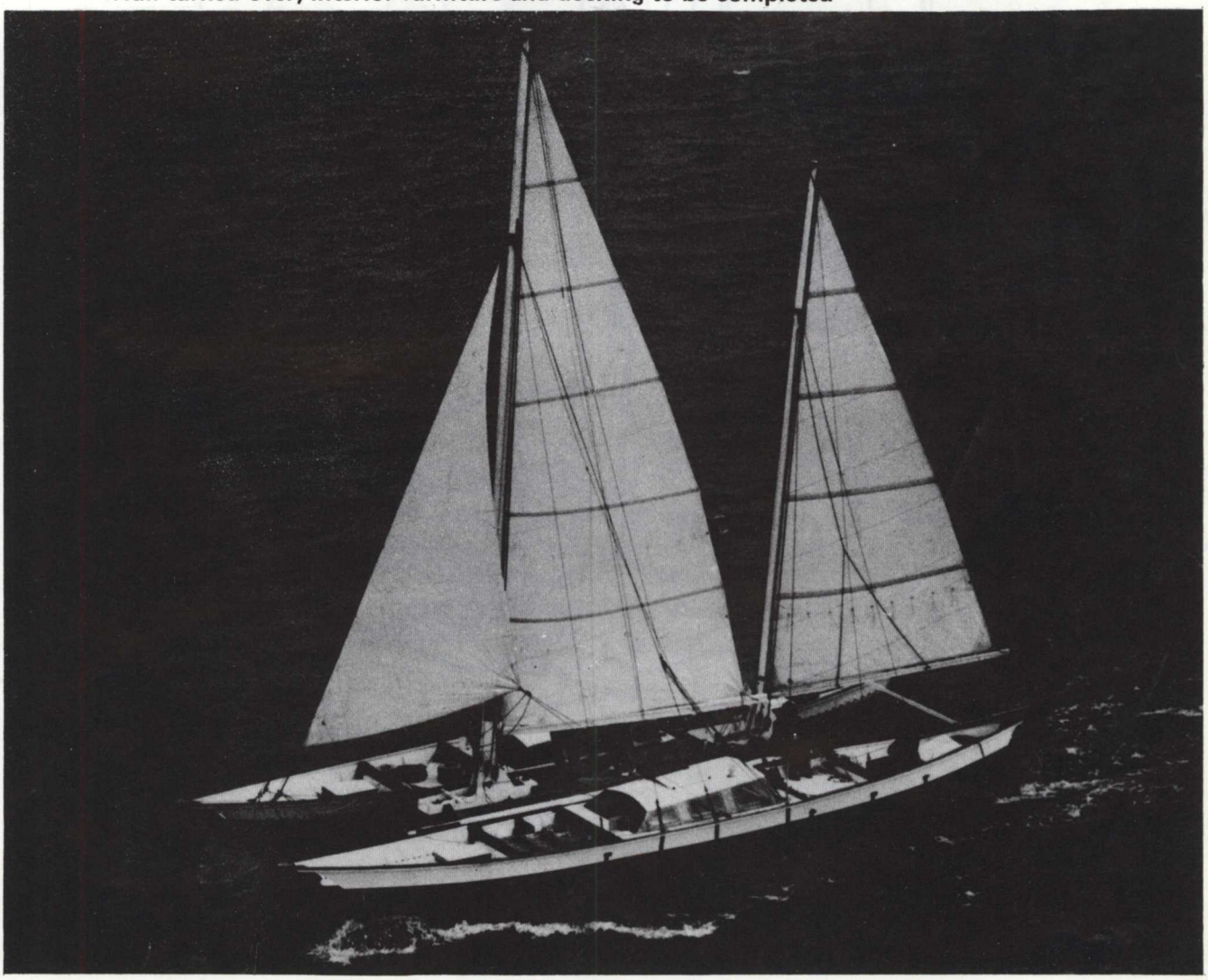


Planked up with the addition of the skeg

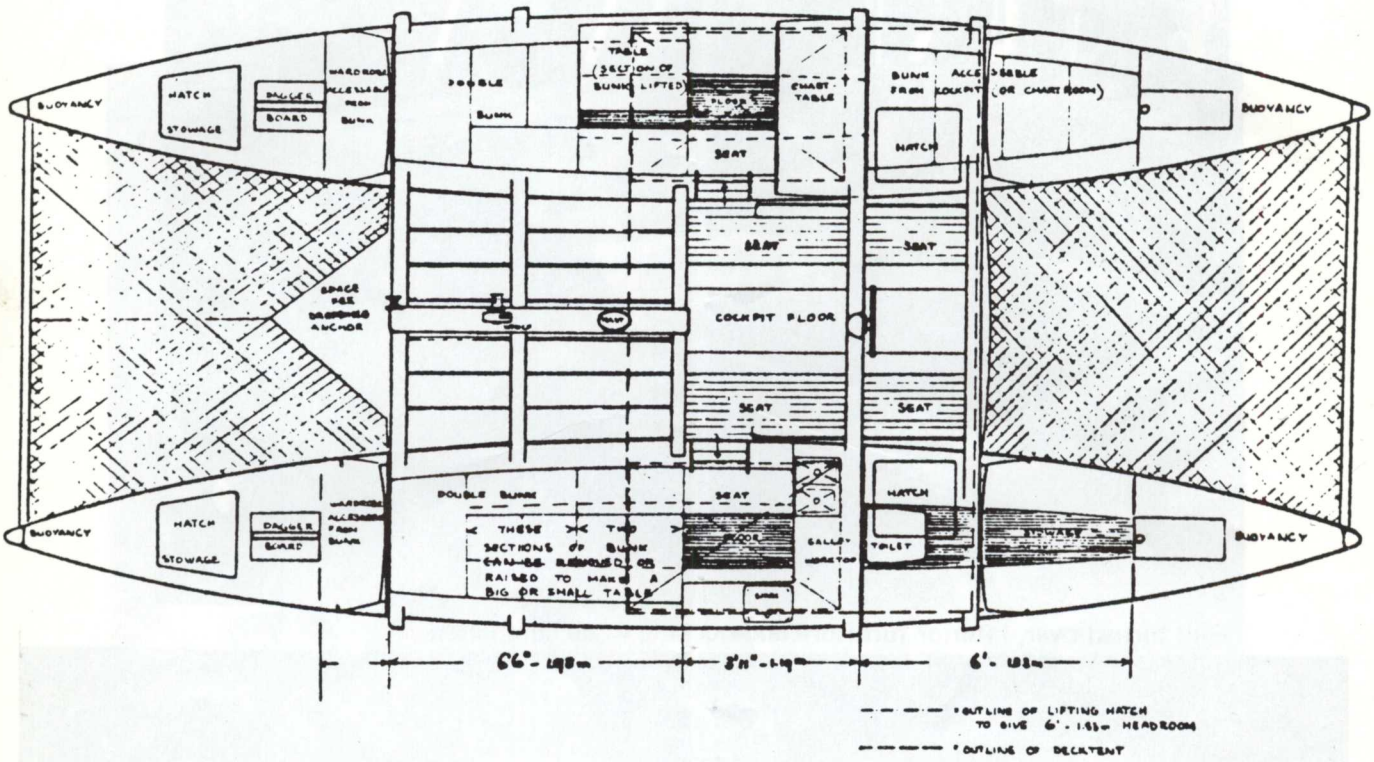


Sheathed in nylon

Hull turned over, interior furniture and decking to be completed



FRYGGA OF CYMRU



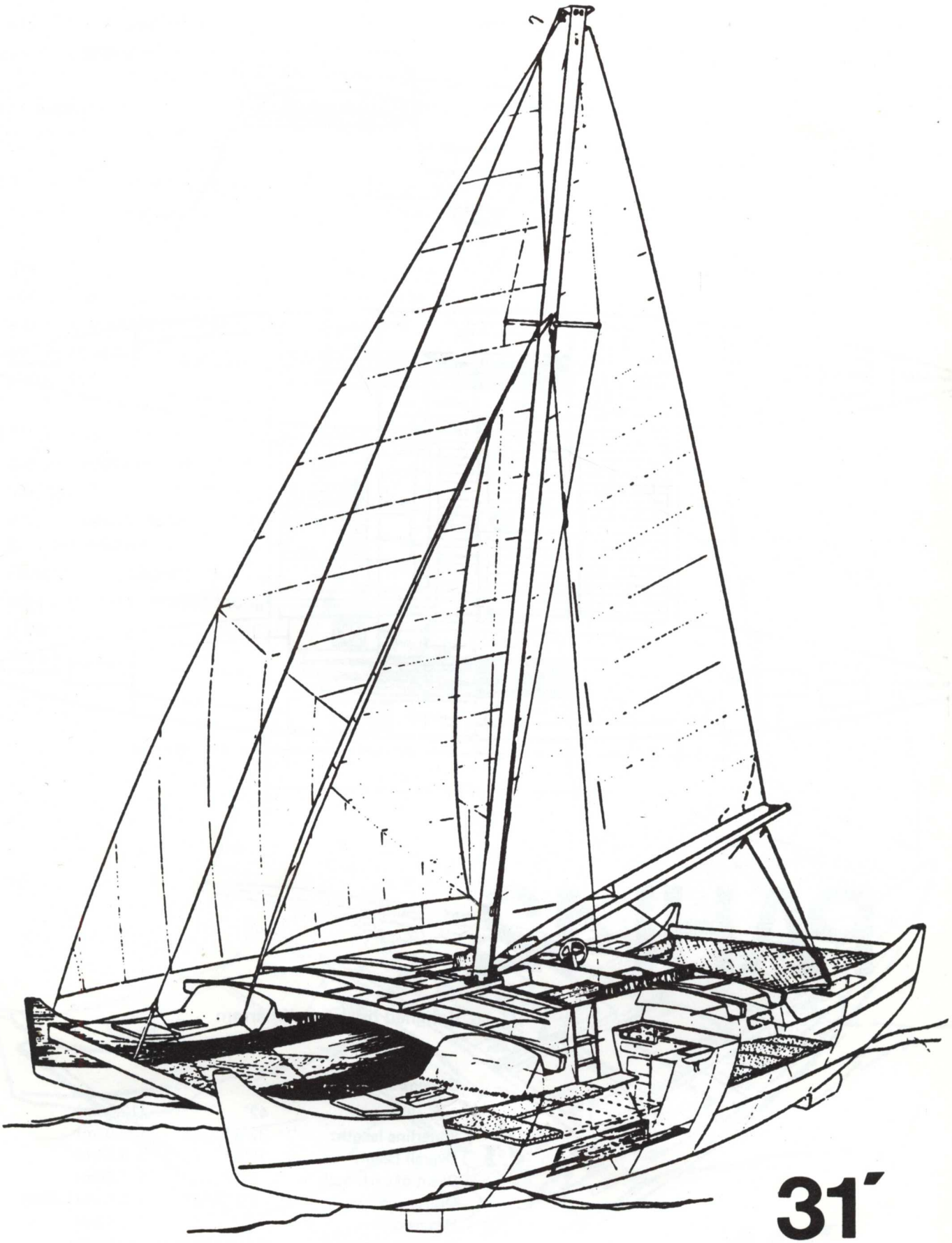
PAHI 31

designed by James Wharram

Dimensions:

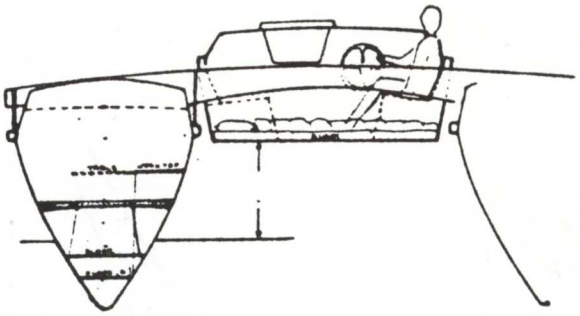
Overall length:	31′	(9.45m)
Waterline length:	24′	(7.32m)
Overall beam:	14′3″	(4.34m)
Beam of each hull:	4′2″	(1.27m)
Draft:	1′6″/2′6″	(0.46m/0.76m)
Headroom:	4′6″; 6′, with lifting main cabin hatch, (1.37m; 1.83m)	
	3′ over bunks (0.91m)	
Sleeping capacity:	2 double berths, 1 single berth	
Weight:	1½ tons	
Loading capacity:	1 ton	
Sail area:	370sq.ft – 450 sq.ft. (34.4sq.m. – 41.8sq.m.)	

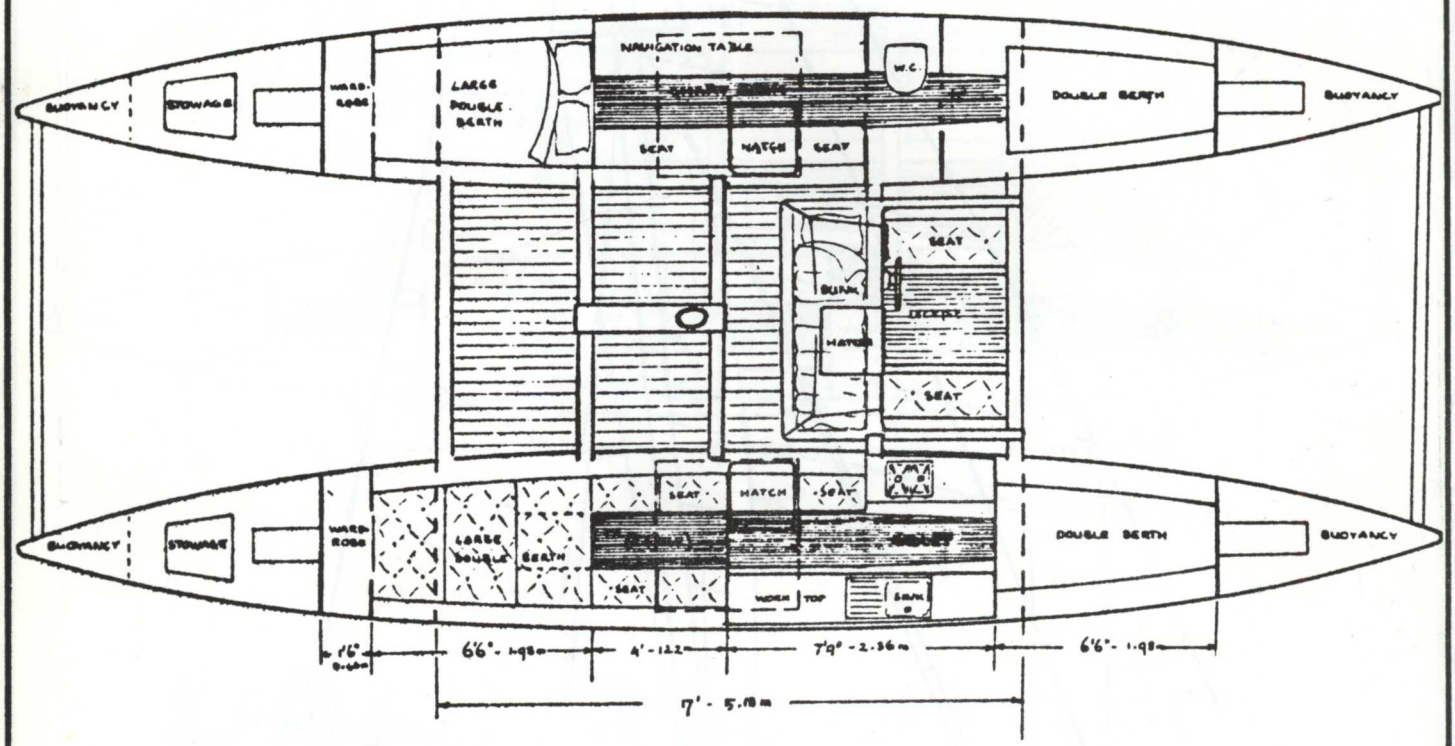
The Sailorman



31′

The new shapes have a soft rounded V. The bulkheads are not framed, they butt up to the plywood hull skin and are joined to it with fibreglass, rather like a Mirror dinghy.





PAHI 42

designed by James Wharram

Dimensions:

Overall length:	42′	(12.80m)
Waterline length:	32′6″	(9.93m)
Overall beam:	18′6″	(5.64m)
Beam of each hull:	5′3″	(1.60m)
Draft:	2′1″/3′6″	(0.64m/1.07m)
Headroom:	6′	(1.83m)
Sleeping capacity:	2 extra large double berths, 2 double berths	
Weight:	3 tons approx.	
Loading capacity:	2 tons approx.	
Sail area:	600sq.ft. – 900sq.ft. (55.7sq.m. – 83.6sq.m.)	

The Sailorman

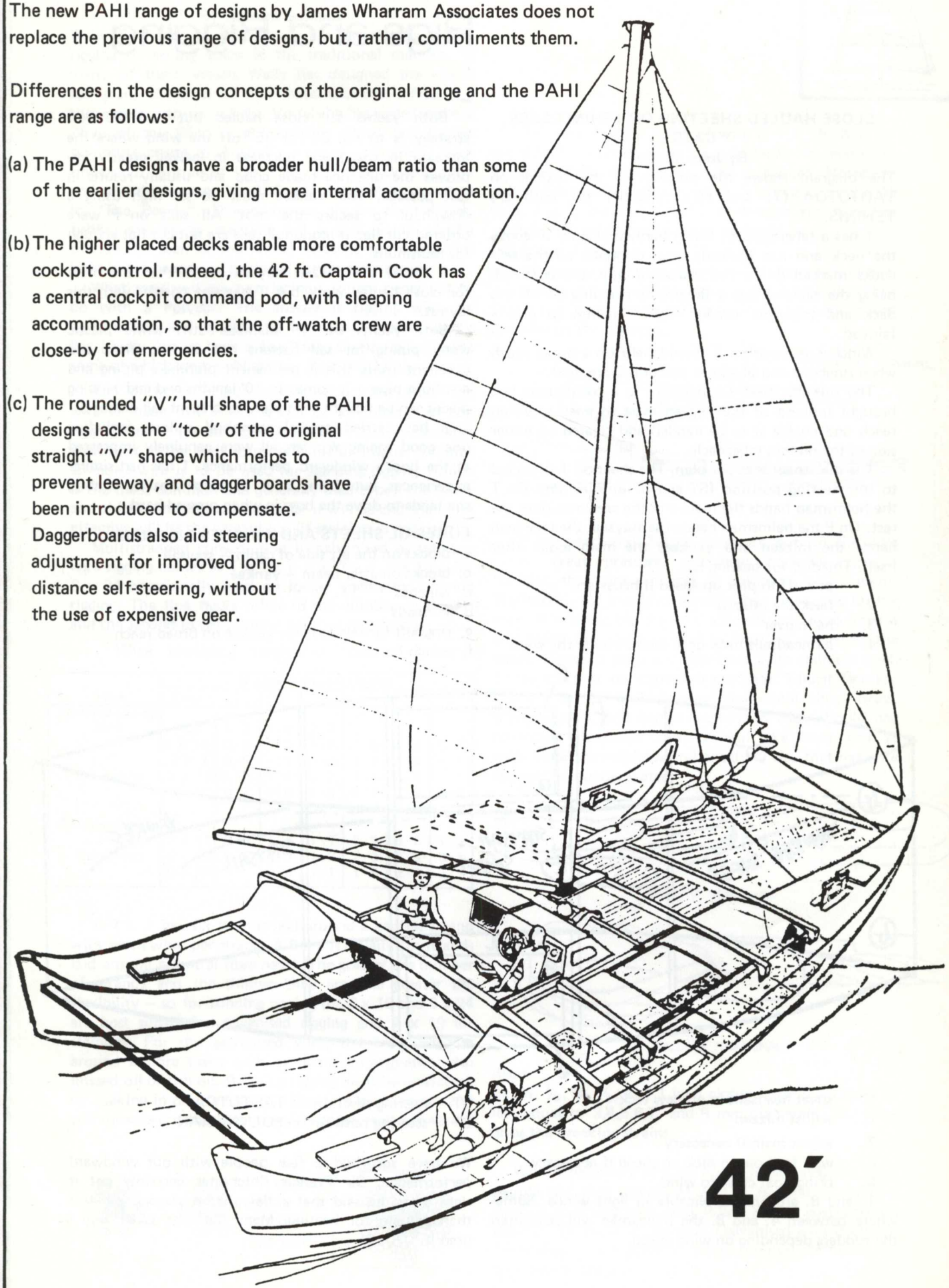
The new PAHI range of designs by James Wharram Associates does not replace the previous range of designs, but, rather, compliments them.

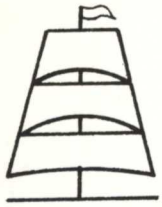
Differences in the design concepts of the original range and the PAHI range are as follows:

(a) The PAHI designs have a broader hull/beam ratio than some of the earlier designs, giving more internal accommodation.

(b) The higher placed decks enable more comfortable cockpit control. Indeed, the 42 ft. Captain Cook has a central cockpit command pod, with sleeping accommodation, so that the off-watch crew are close-by for emergencies.

(c) The rounded "V" hull shape of the PAHI designs lacks the "toe" of the original straight "V" shape which helps to prevent leeway, and daggerboards have been introduced to compensate. Daggerboards also aid steering adjustment for improved long-distance self-steering, without the use of expensive gear.





Rigs and Rigging

CLOSE HAULED SHEETING ON TEHINI CLASS CATS.

By John Martin

The diagram shows the position of the fittings on TAOTOTOA (T) and POLYNESIAN (P) both are TEHINIS.

T has a tabernacle of Kurin hardwood only 3" above the deck and has fairleads from ringbolts on the side decks marked d. on the starboard hull, the port hull being the same. P has a tabernacle standing 9" off the deck and therefore needed higher fittings to give a fairlead.

Winches at position F would help on a broad reach when ringbolts and blocks at position E are used.

The mizzen sheet arrangement is a continuous line brought forward of the mizzen mast to keep it within reach and enable it to be handed and cleated on either side of the mizzen tabernacle.

The mainsheet is as per plan. The sheet on T being led to the steering position (ST and SP on diagram). On T the helmsman hands the main and the crewman does the rest. On P the helmsman hands the staysail, the crewman hands the mizzen and yankee, the main looks after itself. The drill for tacking is:

1. pay off to pick up speed if necessary
2. back the mizzen
3. helm over
4. let headsails back until well through the wind
5. sheet headsails in on new tack
6. adjust mizzen
7. adjust main if necessary
8. wait for boat to pick up speed if necessary
9. bring boat close to wind

1. and 8. are only applicable in light winds. Somewhere between 4. and 8. the helmsman will straighten the rudders depending on wind speed.

Both yachts sail close hauled but find the best strategy is to sail 50° or 55° off the wind where the increase in speed and decrease in leeway greatly improves the distance made good and usually results in fast passage. The Yankee must be set high using a downhaul to secure the foot. All sails on P were ordered cut flat as monohull sails are not cut flat enough for multihulls.

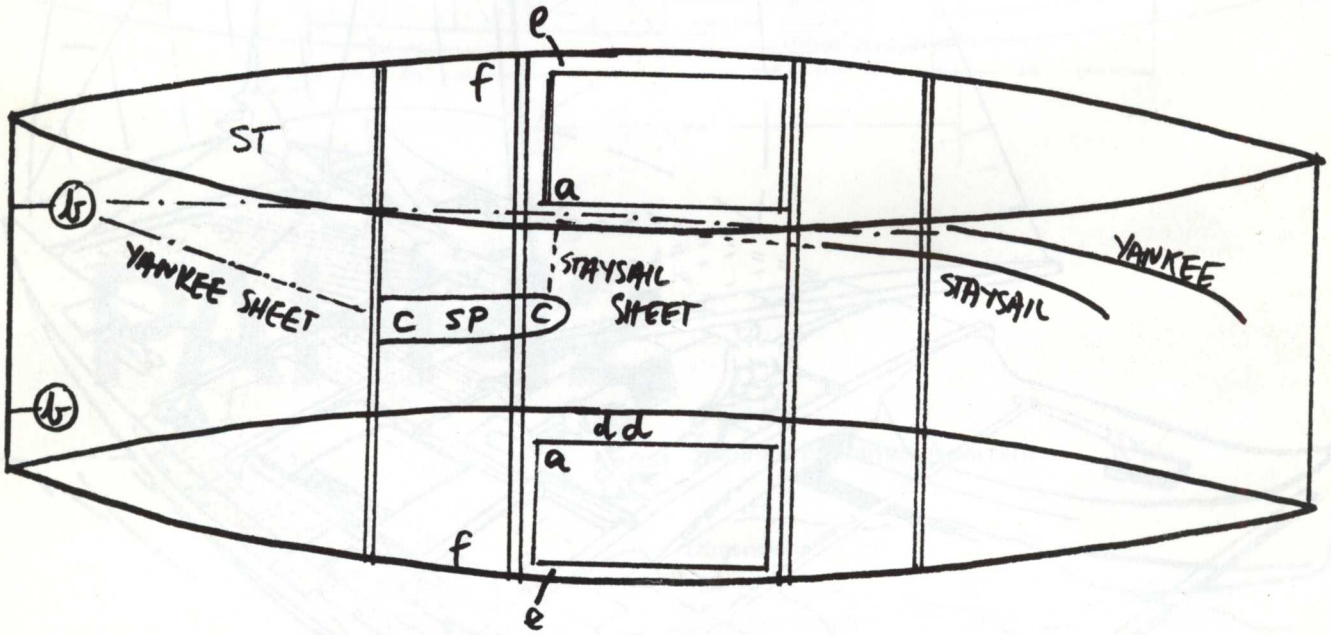
P found the mizzen staysail better than the main for close hauled work but T has not tried it with this layout.

Both yachts use 1" diameter stiff white plastic water piping for sail battens and find it cheap and excellent (note this is permanent plumbers piping and not hose pipe – it comes in 10' lengths and end capping pieces can be bought separately to prevent sail damage).

P has carried several monohull sailors, including one good racing skipper, all were genuinely impressed at the boat's windward performance. T has had similar experiences but, being built of much heavier timber, she tends to drive the bow in when pressed hard.

FORESAIL SHEETS AND WINCHES DIAGRAM

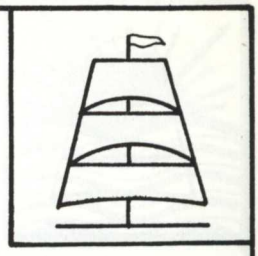
a. blocks on the aft side of cabin – staysail
b. blocks on after beam – yankee
c. winches
d. fairleads
e. ringbolt for fairleads for yankee on broad reach
f. winch for e.



ST – steering position on TAOTOTOA
SP – steering position on POLYNESIAN

We have surprised a few people with our windward performance. Sir Francis Chichester certainly got it right when he said that a flat mizzen staysail is better than a main for beating. Many old salts asked why I used it.

The Sailorman



WALLY BUCHANAN -- MASTER RIGGER

By Richard Bumpus

Wally Buchanan is well known for his talents in the rigging of sailing ships in the traditional manner. In many of these vessels Wally has designed the whole sail plan, obtained all the materials, then fitted out the vessels with some help. Vessels he has rigged include "Eye of the Wind" – a brigantine fitted out for an adventure cruise to Australia, a topsail schooner "New Endeavour" – star of the T.V. series the Onedin Line and now to be used by BBC T.V. for Darwins voyages in "The Beagle", Thames barges on the Kent Coast, fishing smacks to mention but a few. Some of the photos I've seen of the sailing ships he has rigged and been in the process of rigging are truly magnificent.

What may you ask has rigging a square rigger got to do with a Polycat? The answer is rigging wire, its construction and application in various degrees. Wally has kindly let us have a few facts about rigging wire, some of which were published in Boat magazine.

The thicker the individual strands from which the wire is made, the stiffer it will be. Stainless steel rod rigging will be the strongest form, but requires specialist treatment at the ends to prevent metal fatigue. If multi-stranded wire is to be used for standing rigging (which is the most common and generally used type), the fewer and thicker the strands the stiffer it will be and the more effective will be the galvanising (if stainless is not used).

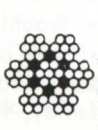
Multistranded construction in galvanised or stainless wire rigging comes as 1 x 19, 6 x 7, 7 x 7, 6 x 19, with 6 x 24 occasionally used on longer yachts for running rigging. The first figure refers to the number of strands and the second to the number of wires per strand.

Wire breaking strain in tons

Type	Diameter in millimetres						
	Const	3	4	5	6	7	8
Standing rigging							
S/S	Rod	1·2	1·9	2·7			
"	1 × 19	0·9	1·5	2·1	3·6	4·6	5·6
"	7 × 7	0·8	1·1	1·65	2·7	3·4	4·1
Galvanised	1 × 19	0·85	1·4	2·2	3·4	4·4	
"	7 × 7	0·7	1·0	1·5	2·7	3·3	4·4
Running rigging							
S/S	7 × 19	0·8	1·1	1·7	2·9	3·5	4·2
Galvanised	6 × 19	0·6	0·9	1·3	2·3	2·9	3·1
" "	6 × 24		0·8	1·1	1·9	2·4	2·7

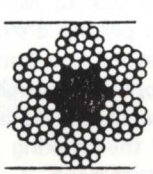
A 7 x 7 has six strands laid around a central strand with seven wires per strand. A 6 x 7 is usually six strands laid around a central fibre heart. The greater the number of strands and the thinner they are, the greater the flexibility – so for running rigging the 6 x 19 and 6 x 24 are best suited for galvanised rigging and 7 x 19 for stainless. For the galvanised wire, the wires are laid around a fibre heart such as hemp impregnated with linseed oil or fish oil. Running rigging must be lubricated by soaking in oil. The heart will act as the reservoir and will squeeze out the oil as the wire passes over a sheave.

6 x 19



7×7

The correct way to measure rope wire

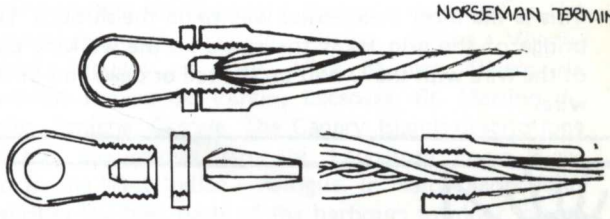


The most popular form of wire is 1 x 19. It is unsuitable for splicing and its popularity is related to machine made end fittings such as swaged, Norseman and Talurit ends. With 19 wires as opposed to the 49 in a 7 x 7, the 1 x 19 will be stronger and have less stretch. It is smoother on sheets and sails.

Some End Fittings

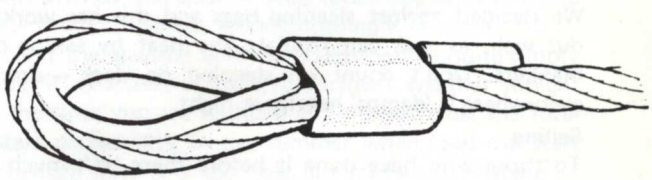
In a Norseman end, the splayed end of the wire is nipped around an olive. It can be fitted without special skill or tools, but care should be taken that the wire is not crippled by the clamping.

NORSEMAN TERMINAL



The swaged and Talurit ends are put on the wire under great pressure. Although basically straight forward, there are a couple of points to look out for. The end fitting should be *exactly* the correct size for the wire. If it is too big the wire will pull out, if too small it will pinch the wire and lead to fracture, caused by the stress. Swagged ends are associated with stainless steel, where there is no corrosion problem. Talurit ferrules, though can be in copper or aluminium alloy. Brass, stainless steel, and copper/aluminium alloy should not be mixed otherwise corrosion will take place, such as with metal centreplates and anything else that has wire connections under water.

SWAGED TERMINAL



TALURIT TERMINAL

Sizes

$\frac{3}{8}$, $\frac{1}{2}$. $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, and 1 inch circumference are more or less equal to 3,4,5,6,7, and 8 mm diameters. The table gives the breaking strains.

With inflationary process about these days, one hears people say that galvanised wire is as good as stainless steel. It is, if you look after it and it only costs about a third of the price of stainless. Galvanised wire is known for having tensile qualities, while stainless steel wire can be brittle in the end.

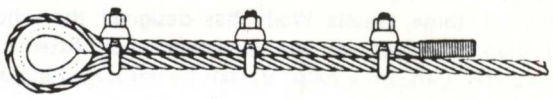
The Sailorman

Galvanised wire shrouds need looking after and the best way to do this is to fit a plastic sleeve over the bottom few feet of the shroud above the rigging screw, seal the lower end and pour in oil instead of rainwater which runs down the shroud. Another traditional cure is to parcel and serve the lower foot or two of the shroud. This should be done when the wire is new. Oiling should be done over the winter by soaking the wire in it. Sail hanks can erode galvanising on a forestay but lubrication will help make it last. Stainless steel makes life easier but costs a lot more.

Bulldog Grips

This is the most inexpensive way to do the shrouds. The bridge of the grip takes the stress on the working part of the wire with the U bolt on the tail or dead end of the wire.

Correct.



Wrong and unsafe.

Wally Buchanan has rigged many a small boat including catamarans in between rigging traditional sailing ships. He is known all round the Kent coast, especially at Faversham, also at St. Catherines Dock in London. He has travelled to Scandanavia, France and even Afganistan to rig ships. Several newspapers and journals have featured his work which has included descriptions of the ships he has rigged, photo features of the rigging and of wire splicing. If you want your cat rigged, why not drop him a line at 27B Fielding Street, Faversham, Kent. Tel. 3458. He will provide the materials if required. I'm sure he would be pleased to help.

Over which horizon did you sail?

GENERAL NOTES ON OCEAN VOYAGING FROM A WOMAN'S POINT OF VIEW
By Wendy Martin

Moving on board

We moved on board about six weeks before leaving England, and were glad of the time to settle in. The main difference is the lack of space; with only three adults and two children it seemed cramped on our Tehini. Using the tender to go ashore also seemed inconvenient. It was quite a boost to our rapidly disappearing enthusiasm to be anchored in a beautiful area – Lelant, near St. Ives, and later the Helford River. I recommend a fridge and shower if possible and a cooker with an oven gives you far more scope than just having rings. We decided against sleeping bags and this has worked out well, as you can regulate the heat by taking off blankets. Don't count on sleeping on deck – almost everywhere it 'damps' heavily at night.

Sailing

To those who have done it before there isn't much to say, to those who haven't – brace yourself! Try to have the first half dozen sails in gentle winds. Thrashing around a windy bay in late September, seasick and frightened, would put any one off. It very nearly finished me! I've been told many times that I should have a trip on a monohull before I comment on the motion! But bear in mind that the large ocean seas are generally more comfortable than the short, lumpy seas met near the coast. Mum and I had absolutely no experience before we left England, and creaking beams, large seas, and log headings of over 10 knots terrified us! But seven months later sitting in the glorious sunshine of Antigua, it was all worthwhile.

Crewing

Being female presented a few problems – I got scared more easily, and could have done with more physical strength when fighting the genoa or raising the anchor. My father and I cruised on our own from Vivero, North Spain to Lisbon, Portugal and found that two isn't really enough if you haven't got a self sterring gear. Don't worry too much about lack of experience – you soon learn and common sense will keep you safe. Older people take longer to adapt, naturally. No amount of enthusiasm can make up for fitness and stamina.

Children

It is an ideal life for disciplined children. We have confined ours to the centre deck whilst at sea, although we have a safety line by the toiletand they sit there and fish. When the weather is rough food, warmth and an air of confidence keeps them happy. My 11 year old sister spent the Biscay crossing curled up in her bunk with a book. We only let the children help with the crewing if we are desperate – two adults bungling about was enough! Squashed fingers and rope burns only add to the panic.

Cooking

We found that whoever did the cooking was generally too sick to eat it! On day trips we cooked in advance. On passage a strap to sit back on would be a great help, leaving two hands free. Our pressure cooker has been worth its weight in gold, and an extractor fan over the cooker is essential. As a family, Mum does most of the cooking in port and myself at sea – I wouldn't recommend it. Try to work a rota. We couldn't eat

the food we tried to cook in salt water although many boats do.

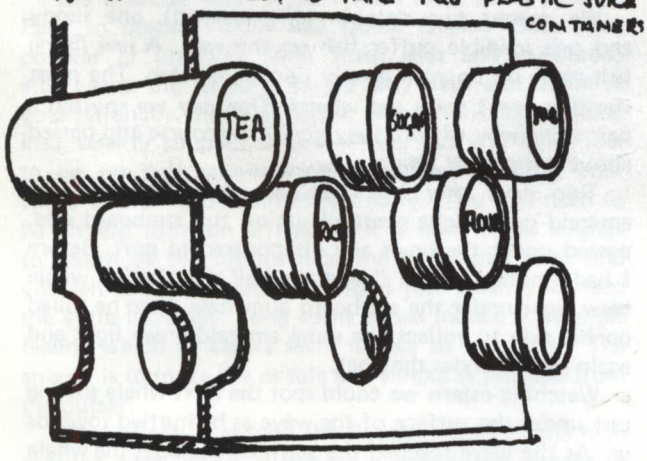
Clothes

I was 'reliably' informed that all I would need was a few T shirts and shorts – don't believe a word of it! To Dad's horror I packed dozens of jumpers, and was jolly glad of them during night watches. Unless you want to be washing all the time, take plenty of everything. Polyester/cotton is the best material, being cool and easy to wash. Skirts are good when trousers are too hot, and shorts too short! A word of warning – steer clear of metal zips wherever possible, as they stick and break if you use salt water on them. Treat yourself to a sunhat that will stay on your head when it's breezy and a good pair of sunglasses.

Health

Before leaving England we asked our Doctor for a list of supplies he thought necessary. It was a very impressive list, and cost a very impressive £44! and then we discovered that it didn't contain a laxative – we were in mid-Atlantic at the time! Constipation is known as the 'cruising man's companion'. Diahorrea can also be a problem. But it'll comfort you to know that we've had no trouble with the water, be it clear, green or orange. Maybe it was circumstance but three of our friends had bad septic cuts on their feet whilst in Puerto Rico. Cuts take longer to heal if they're continually getting wet with sea water. I learn't the hard way that you should keep your hands clear of runaway ropes; especially as they come up tight. It's best to wear shoes while handling rope or chain, and tread on it if it takes off, but don't get a loop round your ankle!

SYSTEM USED BY RUDY TRESNIAK* FOR READY USE STORAGE OF ITEMS LIKE TEA, SUGAR, FLOUR ETC, MOUNTED ON THE GALLEY WALL, IT CONSISTS OF TWO SHEETS OF PLY ABOUT 8" APART AND ANGLED BACK ABOUT 15° WITH HOLES CUT TO TAKE 1 QT PLASTIC JUICE CONTAINERS



* ON HIS 33' TRIMARAN

RUDY ALSO HAS AN INTERESTING NON-SKID DECK TREATMENT!
POLYESTER NET-CURTAIN MATERIAL WITH ABOUT ¼" MESH SET IN POLYESTER RESIN.

TEHINI TO THE WEST INDIES

In the Sunday Express of 20th June 1976 there was a story entitled "Mother sails 12000 mile voyage on home-made catamaran". The cat. was a Tehini called POLYNESIAN and was built by John Martin, who with his family and friend left Falmouth in Cornwall, England and set sail south to Spain, then to the Canaries, and finally to the West Indies. He sent back via Peter Davey many interesting letters which describe places of interest and harbours. Much of what he says about harbours puts pilot books out of date or at least could supplement them. Any PCA members wishing to have photocopies should contact the Secretary. Harbours described on the Iberian peninsula include: Carino, Cillero, Vivero, Ferrol, Figuero do Foy, Viga Bayona, Vivero de Castello, Provoa de Varzin, Lecscoes, St. Martino do Porto, Peniche, Cascais. The Canary Islands descriptions include: Las Palmas, Arrecife, Langarote, Pueto Rico, and in the West Indies – Antigua. In many places John describes the best parts of the harbours to moor, places to find supplies, market, harbours little used by many yachts, places not to anchor, yacht clubs where you are welcome, and those in which you are not – all of great interest, doubtless it would fill most of a SAILORMAN.

IN THE BEGINNING

By John Martin

On our trip from Falmouth to Vivero on the north coast of Spain we were all beginners with one exception who had done a fair amount of fishing off the Cornish coast. Rather than describe yet another trip across the bay I have attempted to set down and analyse our mistakes in the hope that others who start out with little training will gain something from this article.

Firstly the crew two, including myself had only 8 days sailing experience. Four had only 2 days experience and only one of them was expected to assist with crewing and finally Eric the ex-fisherman whom I cajoled into the trip and blessed the day I did so. At least one experienced crew member is essential. Eric was the rock on whom we leaned, the one man who could provide the advice, who knew the sea and could make that extra effort when the going was rough.

Next the weather and the lesson here is quite simply study it yourself, predict tomorrow's weather tonight all the time you are building and do not trust the forecasters particularly in the summer when lows can start in British waters. I did this but made the mistake of trusting the forecasters. Plymouth gave us a 3 day good weather forecast, so despite the wind and cloud we sailed – straight into 2 days of S.W. gales. In fact the first gale warnings were issued 2 hours after we left – only 5 hours after our telephone call.

Navigation proved to be our biggest headache and yet the little we did succeed in doing proved to be sufficient. Firstly throw away all the books on astro navigation not one deals with modern tables and all are far more complicated than necessary. I have six books on the subject and would dearly like to tell the authors what I think of them. Go to evening classes or get a friend to show you how to do it. Then practice until you are sick of it because after two days of storms

what you cannot do automatically you cannot do at all. I was shocked by my inability to think a problem through during and after the storm.

Next do not rely on charts alone, it is surprising how little information is on charts covering large areas. (Admiralty tide tables, for European waters; Admiralty list of lights and fog signals; Admiralty list of radio signals. Nautical Almanac and Pilots are essential – Ed.). Harbours are not always on the Harbour Plan e.g. Carino built in 1972 is still not on Plan 78, and even when they are they are not always accurate. Again on Plan 78 the harbour wall at San Ciprian is missing and should you approach on the line of light course you will go slap into a very solid wall. My charts were collected on the day we sailed so should have been up to date. D.F. fixes provided the easiest position fix but are not always easy to do. Just south of Ushant and again at the Spanish coast the stations tend to be in line and provide little help just where it is needed. Trying to use the stations in their groups also proved useless and we found that tuning into a number of groups and using the clearest signals on each was far easier. Finally for the coast approach as well as D.F. fixes an echo sounder is a great help. For some still unknown reasons we lost the battery for ours and this caused our most serious error.

After two days of gales we had six days of calms and fluky winds which were infuriating – we had clocked up 440 miles and entered a thick fog bank. On a straight course we had 480 miles to cover but we had tacked continuously and I fully expected to clock 550 miles before sighting land. However to make sure we had a good look out during the fog. I suggested looking for land and as I did so I looked to port and slightly astern and much to my surprise the fog thinned visibly to reveal two huge rocks about three miles away, never was the wheel turned so quickly. So never trust your log, mine was checked on the Cornish coast and again on the Spanish coast, so I can only conclude that six days of calm can play havoc with log reading.

Between Vivero and Ferrol

Once again our log had grossly under-recorded although the real trouble had been my failure to identify Banjo Lee. We decided to spend the night at anchor and were joined by many more fishing boats and another coaster. The first 'coaster' turned out to be a Norwegian ferry which had been converted to sail! The masts were oil rig pipes and the rest of the conversion matched the mast. The engine had broken down in Biscay and after letting off flares which the other boats ignored, they sent out a May Day call. A liner came alongside and offered to take the crew to Southampton, but this they declined. Then followed a lengthy debate by radio, with a partially loaded container ship who wanted £20,000 to tow them to Brest – this too was declined but they finally got a tow from the container ship whose owner is now arguing with the insurers. The engine was repaired at Brest by simply disconnecting one cylinder and mast repairs were also carried out although this did not stop it breaking on their trip to Spain. One man was hoisted up the mast and sawed the broken part away, jamming the hoist in the process. He slid 60 ft. down the mast rather than stay up there. Somewhere along the way they had also lost their false keel.

One beauty put into Vivero – a 40 ft, 12 ton double ender crewed by a young couple who had day tripped around Biscay. The only problem they had was with French Customs who just would not believe that the boat was only crewed by two people. At one point they were escorted back to the boat where the Customs searched for the rest of the crew.

The French frequently sail with so many on board that they do not stay in harbour overnight as there are insufficient bunks for the crew. So night sailing avoids an argument over bunks!

Another boat was the last Cuttyhank built by John Sears before he went bankrupt. My nephew had worked on the boat. The owner, an American, was everything a sailor should be. He came over to thank us for advice about the sand bar and after a chat about his boat he again thanked us with the comment that most British sailors are either too class conscious to speak or else a load of scrounging hobos and he was delighted to meet some of normal behaviour. Unfortunately I have to agree with his view, so far only the 12 tonner crew were genuine seafaring types – the French are far less class conscious, the Germans are not prone to gossip but are usually polite and always pass the time of day.

From Peurto Rico, Gran Canaria John writes to say he finds the "comradeship of sea". He mentioned that POLYNESIAN has a BMC 1.5 litre diesel engine with conversion kit. The spindle between the gearbox and drive was only $\frac{3}{16}$" instead of 1" and so sheared off on harbour entry – be warned.

The Passage

The trip took 22 days and times for the other boats, this season, vary from 19 to 29 days. Considering that we took it very easy, most of the time on one headsail and only one day with more than two sails up, it says a lot for Wharram cats. The lack of foresail booms, however, makes trade wind sailing a misery.

We caught two dolphin (one escaped), one tunny and one inedible puffer fish on the way. A few flying fish came on board but only two were eaten. The most startling event were the whales. One day we spotted a pair some way off but they kept their course and passed about forty yards astern.

Two days later I was at the wheel when a large emerald green light overtook us on the starboard side, passed under the bows and disappeared to port. Before I had finished saying "what the hell was that" a whale blew right under the starboard gunwhale, then he rolled on his side to reflect the same emerald green light and again passed under the boat.

Watching astern we could spot the next whale surfing just under the surface of the wave as he hurtled towards us. As the wave reached the stern of the boat the whale would disappear only to reappear alongside the boat in the trough behind the wave. Alongside they would linger for 15 to 20 seconds then pass under the boat frequently rolling on their sides as they did so.

This went on for about twenty minutes although we never saw more than one whale at a time, it was obvious that there were several involved as we were able quite easily, to measure their length against the boat and they varied from 25 to 50 ft. – the larger one causing me to panic a little when he took his time passing under the boat.

By comparison with the first pair this lot were totally different as they could not be seen more than 50 yards from the boat except when surfing in, when the sun reflected off them. They seemed to vanish in the waves showing only a few inches and a rather short fin when blowing, where as the first pair seemed to bring a good third of their body out of the water to blow. Indeed at first I wondered if they were large dolphins, but I had to admit fairly quickly that one does not get 50 ft. dolphins!

During the whole trip we frequently saw birds, indeed my children quickly got fed up with pointing them out and as there were only two species, one gradually loses interest until the large birds are met near the West Indies.

MORE ABOUT THE PASSAGE

John's Point Of View

Canaries to Caribbean Islands – all down hill sailing say the old salts, with justification. However, an easy ocean passage is still an ocean passage.

November to January is the popular crossing time, November being the calm wind month. The experts have never recorded anything above force 7, but it can blow force 6 day after day. The winds blow from the North or East and rarely anywhere else although 24 hour Southerly gales are not unknown between the Verdes and Canaries. The effect of the wind swinging between N. and E. is to create something resembling a cross sea and one is occasionally banged hard when the two meet the boat together. Add to this the heat of the sun, an occasional squall and the picture is complete.

The record passage is an unbelievable 9½ days while the accepted norm. is 25 days. Anything under 20 days is considered fast which says much for Columbus who took 20 days some five hundred years ago. On the other hand, and always to be allowed for when planning the trip, is the slow passage time of 40 days at sea, long periods of brisk warm winds, a lumpy sea, squalls and of course days of glorious sailing when everything is just right.

The amateur must prepare for a long, tiring passage. Easy to prepare foods like Quick Quaker Oats (very popular at present), fresh fruit, eggs and crispbread etc. Leave the cooking to the easy days and conserve your strength. Keep a check on rations by dividing into weekly supplies before setting out and remember to go on half rations early if necessary, check your water as well and again ration early. You will need to be on top form on arrival, so it is best if you arrange to return to full rations near the end rather than find yourself short of water and food just when you need the extra alertness. Long spells at sea induce a lethargic feeling which amatuers seem unable to overcome. The answer is to make life as safe and simple as possible from the outset.

The journey is around the Southern half of the high pressure area which is almost a permanent feature in this section of the Atlantic. One heads for 25° of latitude and longtitude gradually changing course from SW to W as the wind permits. Navigation can be kept simple by using the D.F. beacons until NW of the Verdes. Then take noon sights at *local noon* to give the latitude, and the time difference between local noon and Greenwich noon to give an approximate longtitude. (See Reed's "Noon Sights" and "Time Arc"). Next pick up the aero beacons on the Caribbean Islands being careful not to close the land except during daylight. The experts will tell you that this is appalling navigation, it is, but it is exceedingly simple. The latitude will be accurate, the longtitude will be up to 60 miles out, this can be checked with the log. The aero beacons give a reasonable fix, sufficient to ensure that landfall is made in daylight.

From there on in one needs good, accurate coastal navigation. This is the seas of the coral reef where amateur astro navigation and aero beacons are just not good enough. Frequent and accurate coastal navigation plots are the answer, which is why one needs to arrive in good mental condition. Another tip is to leave 25 days before the next full moon so that one arrives with glorious moonlight which is almost as good as daylight in the tropics.

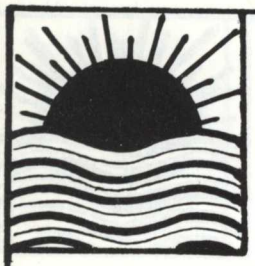
Buildings and aerial masts marked on charts or described in those beautiful American pilots have a habit of vanishing amongst the trees or simply become lost among other buildings, if possible, get contoured charts, the mountains do not move or at least only once in a thousand years or so. Once satisfied with the coastal fix take the bearing to the harbour entrance off the chart. Then using the compass find its position on the coast and head in. The entrance will probably not reveal itself until you are quite close, fear not, it is time for confidence in one's own handiwork.

The Atlantic takes a delight in removing paint and varnish so leave your topsides until you arrive. However the one foot tides of the Caribbean makes slipway owners very rich so beach your yacht and do the anti-fouling in the Canaries using a good tropical anti-fouling.

Finally remember the best laid plans can fall apart. We met at Las Palmas a millionaire's dream yacht – a £110,000, 45 ft monohull which had just completed a $150,000 (U.S.) refit. She had Decca Navigation linked to automatic steering, weather map print out via satellite, 50 mile radar, radios, deep-freeze, fridge, central vacum pump with plug in points for the cleaner hose all over the place, hot and cold electrically pumped fresh water, and so down to a battery operated pencil sharpener in a teak box. She lost her anchor leaving Las Palmas (I have it) and disaster followed daily until they were pumping out 600 gallons of sea water per day and the owner was pleading for a helicopter to take him off. Several other boats and mine crossed at the same time with no more than abroken sail batten.

One yacht went on the reef at St. Lucia. Another heading for Antigua found himself at St. Lucia! A lady navigator arrived off Antigua, only to be convinced by a crewman who had done it all before, that it was definately not Antigua. They made a round trip of sixty miles and arrived back with a very sorry crewman, and a very, very angry lady navigator. Which all goes to prove that one must arrive in tip top form. No one, not even a millionaire, gets lost on the way, but a few get lost on arrival every season. The trip is not a joyride but having done it one feels a sense of achievement, an inner satisfaction, and of course one is in the glorious Caribbean – a sailor's paradise where the comradeship amongst boats of all classes has been forged by the Atlantic. From 20 ft singlehanders to 120 ft charter boats we all made it in our own way and at English

The Sailorman



Harbour at Christmas, 132 yachts made sure it was worthwhile.

Legal Note

The captain of a yacht is responsible for the crew. They must either leave before or with the captain. Crew changes etc. must be cleared with the immigration authorities. crew who run out of money or who get into trouble with the police have to be sent home at the captain's expense. Numerous crew take advantage of this situation to have a good holiday and a free flight home. One crewman sold the ticket provided by the captain and after two weeks holiday on the proceeds, the captain was compelled to provide a second ticket. Should you take on crew make sure you hold the money or an air ticket and do not hand them over until you see them off at the airport. Be warned that on this matter you should not trust your best friend.

About Boats

From Antigua John wrote to say they have been day chartering. Tao To Toa (Tehini) was sold for £17,000 and POLYNESIAN took her place in the charter fleets. Apparently Wharram cats especially Oros and Tehinis are most suitable for chartering as they can get into shallow bays and have masses of deck space.

In John's experience the best battens are plastic water pipes as used by plumbers. They need plugs either end to stop chafing (many polycat sailors do this). John reckons hickory is the only wood good for battens and mentions that he has heard nothing good about fibreglass battens – "watch out for wear on the pocket stitching".

Apparently it is amazing what people throw away. When the SL anchor winch finally packed up, John picked up a seized up cast iron anchor winch in Puerto Rico that a French boat had discarded on the harbour wall. They carried it across the Atlantic on POLYNESIAN and fed it on oil. Finally a sledge hammer helped it to work. An American donated a piece of purple heart hardwood for a handle. Now John says he has to be careful not to winch the anchor into the forward beam. From SWEETNESS, a Canadian Tangaroa, he got a non-working klaxon horn – a drop of oil worked wonders. He averages a piece of free equipment every four months.

Daughter Wendy got a job on a charter boat which is hard work with little time off. Most of the crew keep changing as most skippers are nut cases – that's an accurate description according to John. Wendy has one of the few sane skippers which means they get loads of work while others sit at anchor.

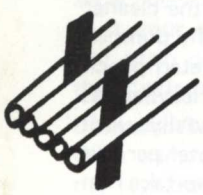
One charter boat regularly takes 1½ hours to back onto the wall which gives all the family great amusement. Another skipper tried to keep his crew by locking them in their cabins – the police took care of him! Another lost his whole crew because he tried to make the girls sleep with him. Another lost his passengers because he insisted on staying in harbour.

Water is 1p a gallon on the fuelling jetty at Antigua. Rum is 45p a bottle!

One boat they saw was worth about $5,000,000 complete with helicopter (marked "tender to"). It was sold by its previous owner because he bought a bigger helicopter. He now has a bigger yacht to match.

In contrast they saw a very ugly cat. the hulls lean in and join at the deck, the bows run downwards. So many people stared at it in astonishment that the owner left again quickly in an eternal search for solitude. Antigua had about 200 yachts at the time of writing (May 1977), there were two trawlers – one still with her gear and numbers on, both had families aboard – the fuel bill must have been incredible.

Smallpox vaccinations and a course of tetanus jabs are very necessary on the Island as both are prevalent.



Self Steering

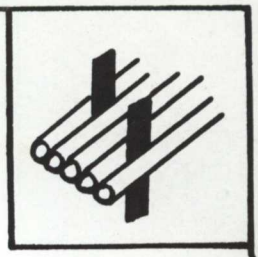
SELF STEERING

By Tom Herbert

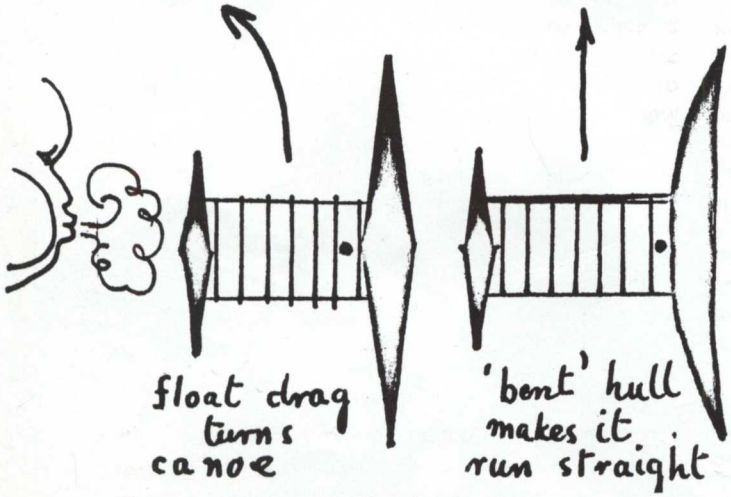
The last time we were discussing self steering, I suggested that we should think of boat control in terms of "balance" to steer straight, and "imbalance" to turn.

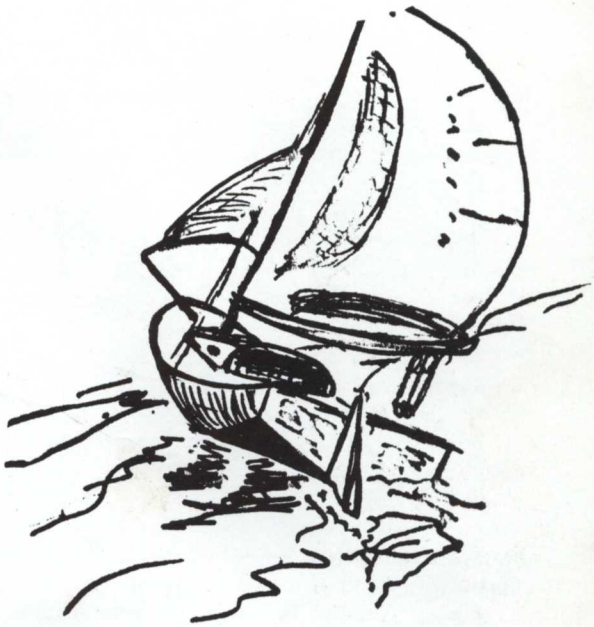
The multihull runs straight but is difficult to turn. It balances easily but we often have difficulty in producing large enough imbalances to turn it. The monohull needs constant attention to keep it running straight, but it can often be made to "turn on a sixpence". It does not balance easily but we can produce ample imbalance to turn it.

The behaviour of a multihull seems to be the opposite to that of the monohull. There are of course multihulls that are quite manoeuvrable, and monohulls that are not. Perhaps the typical western multihull and the western monohull represent the ends of the boat handling spectrum. It should be possible to tune a boat to suit our purpose from the range of behaviour patterns that are possible within the limits of a particular design. In our exploration of the boat handling business I think it would be helpful to look a little deeper into my favourite craft, the pacific outrigger canoe. It is an extreme craft that exaggerates the vital elements of boat handling. It's heavy float set well out on the windward side of the hull creates a massive imbalance that should make the canoe turn in circles around its outrigger. How can we make such a craft run straight? A large proportion of our sail power is wasted in trying to pull the boat sideways, so we might as well use this power to correct the effect of the float dragging in the water. If we set our oceanic lateen sail well up in the bows, this would go a long way towards balancing the boat so



that it would run straight. I suspect that we would have difficulty in getting the boat to turn off wind away from the drag of the float, and that when we were paddling the boat out through the surf we would be wasting too high a proportion of our limited paddle power in keeping the canoe on course. What we need is a "built-in" corrective imbalance to eliminate the effect that the heavy float has on the boats balance. Because the canoe has to surf either backwards or forwards depending on how the seas are breaking, the only practical solution is to build the hull symmetrical in profile so that its behaviour is predictable in either direction, and reduce the turning effect of the float by bending the canoe hull sideways so that its "pointed ends" point away from the outrigger.





The crescent shape in the drawing is an exaggeration. The amount of athwartships asymmetry built in to the canoe hull is just enough to balance out the canoe at paddling speeds. At higher speeds when surfing or sailing the effect of the hull bending exercise will be to over balance the effect of the float drag so that it will tend to turn away from its float, off wind. This is fine because we have plenty of control left by shifting weight to and fro when surfing, or adjusting sail when in the open sea.

The knife like canoe hull must be very difficult to turn. IT NEEDS LARGE IMBALANCES TO TURN IT. The drag of the outrigger float is a blessing in disguise.

This technique of using a boats inevitable and often large imbalances to steer with is the technique used on the monohull. The fat heavy hull heeling over to the wind pressure in its sails presents a distorted asymmetrical shape to the water as it crabs along sideways making leeway. We can give the boat a built in corrective imbalance by fitting a skeg aft (or keel and deadwood). You will usually find the heavier, fatter boats need a lot of area in the skeg to compensate for the effects of distorted water flow. We can give a "undirectional boat" like the monohull a built in corrective imbalance by adding a skeg aft (assymetric profile. We can give a reversible boat like the surf canoe a built in corrective imbalance by bending the hull sideways (athwartships assymetry. To achieve good boat control we have to "tune" our various imbalances so that they cancel each other out as far as practical. We then need a variable imbalance (our rudder) to keep the imbalances in check until they are needed for steering. Monohulls are tuned by moving the boat's centre of gravity around (shifting ballast or bodies). Multihulls are tuned in the same way. If you tune out the relatively small imbalances that must occur because the sails are up in the air and the slim hulls dragging through the water, we are not left with any large imbalances to steer with.

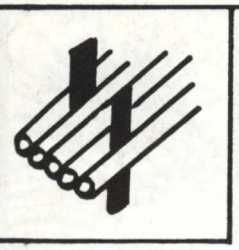
Instead of tuning our multihulls to eliminate imbalances, perhaps we should deliberately introduce them to help our steering. The surf canoe gives some indications of possible techniques. Think of a catamaran as a surf canoe with a large windward float!. The boat handling technique is to be able to work up the imbalances to the right size to give the desired control.

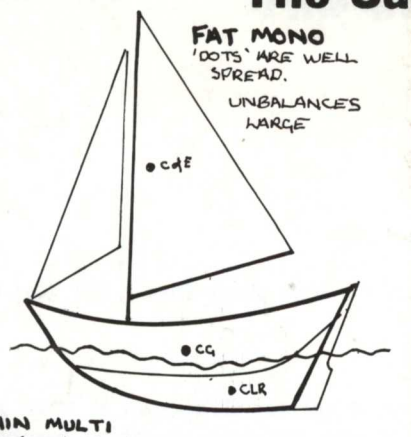
There are penalties for taking imbalances around with you, even if they have been neutralised. One penalty is drag. Another is that a helmsman is needed to continually juggle with the imbalances to keep control.

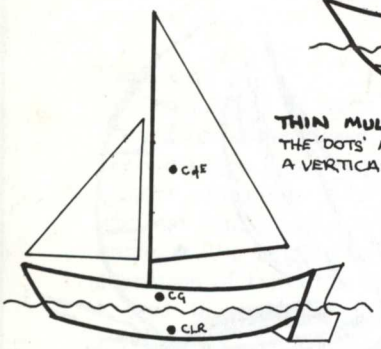
The surf canoe technique can be pursued on the multihull to the point at which it will behave like a monohull in terms of sensitivity and response to the helm. It will never maneouvre quite as well, and it will accelerate and slow down violently due to its lack of inertia. A surf canoe tuned multihull will need an automatic helmsman to self steer, but the normal monohull vane gear will not do the job properly.

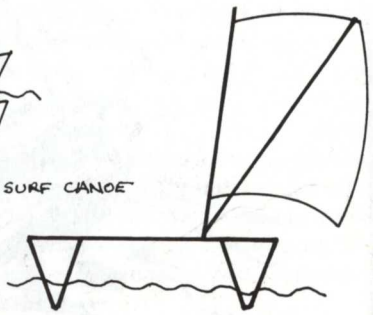
As an alternative we have the Kon Tiki method of boat control where we take a minimum imbalance multihull and quite deliberately create balance and imbalance as required using strategically placed dagger boards to vary the underwater shape. There are snags with this method too. Although the boat does not need constant attention to stay on course, the helmsman has to move around smartly when a change of course has to be made. It is quite likely that the drag of the dagger boards is just as great as the imbalances created by the surf canoe technique. The Kon Tiki method gives "natural self steering" that may not be as accurate as a surf canoe tuned boat with a good auto-pilot.

We could sum up the boat control business by stating that within the limitations imposed by a boat's shape and weight it is possible to tune it towards the Kon Tiki end of the spectrum where we want to use it as a cruiser or work boat. Where we require maximum manoeuvr-









ability and sensitivity for racing we can tune it towards the surf canoe end of the boat control spectrum.

The self steering business is complicated by the variations in possible tunings. For example the monohull self steering techniques fall naturally into two broad categories. At the surf canoe end we have the typical british racer, designed and tuned for racing round the buoys. At the Kon Tiki end we have the traditional American yacht designed and tuned for cruising. The vane gear is the main technique on British boats while the American boats have less need of the vane gear. I believe that we have a similar situation among the multihulls. We are primarily concerned with the Polycat which is not a perfect Kon Tiki raft with round log shaped hulls but two surf canoes tied together. The surf canoe needs large imbalances to steer it. The polycat too needs plenty of imbalance to steer it. Hopefully we can make full use of our inevitable imbalances and with the aid of adjustable dagger boards (dropped through the bridge deck of course) achieve good firm manoeuvrability. I see the polycat as a cruiser to be tuned towards the Kon Tiki end of the spectrum.

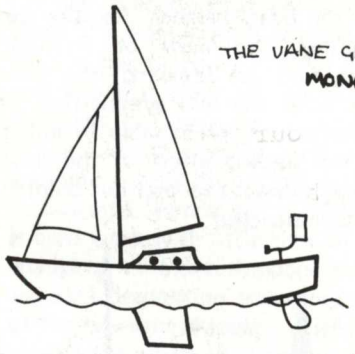
Self steering is achievable without the need for complex automatic helmsmen on the Kon Tiki tuned boat. A thoughtfully rigged and tuned boat with its dagger boards carefully placed can be made to sail a steady course relative to the TRUE wind (i.e. compensating for speed surges).

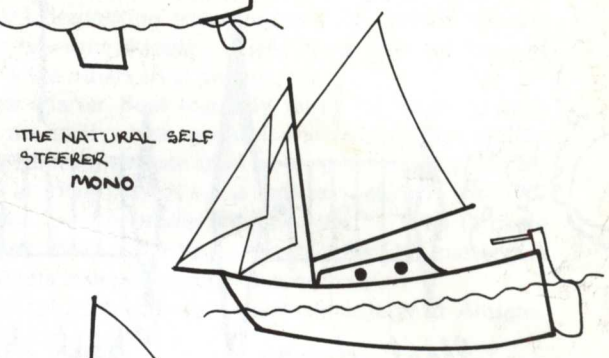
As with all simple things, the simpler it is, the more difficult it becomes to make it work properly. The seamanship of the Kon Tiki multihull requires alot of practice and imagination. What a worthy task for the R.Y.A.!

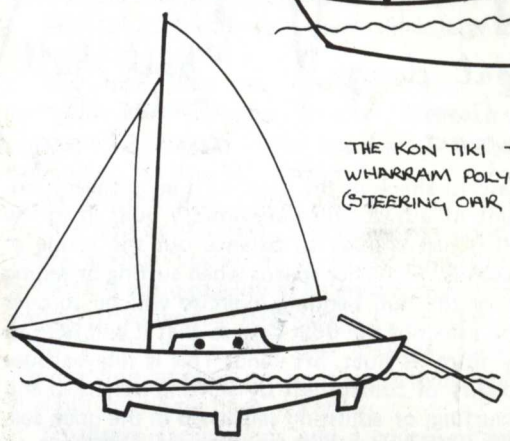
The small polycats, and the racing versions of the larger boats can be tuned to the surf canoe method using carefully developed imbalances to give good boat control. Self steering would not normally be required on such a boat. If it is needed then things get complicated.

In the first article on self steering I stated that the vital task of the monohull helmsman was to sense and monitor the direction of the APPARENT wind, and make the necessary helm corrections. This simplification is only possible because of the boats high inertia and limited speed range.

The vital task of the multihull helsman is to compute the direction of the TRUE wind and make the necessary helm corrections.







The problem here is the computation. The helmsman can sense APPARENT wind direction (usually dead ahead on a fast multihull). He has some sense of wind speed (anemometer or the blueness of his nose). He has some idea of boat speed (speedometer or the painfulness of the spray that he can't dodge). He also can sense changes in acceleration. The one thing he cannot do is to sense where the true wind is.

On a fast multihull a wind vane will point steadily ahead as the boat accelerates in a curve off the wind. There will be a sense of acceleration and an increase in boat speed and APPARENT wind speed. It is possible to calculate where the TRUE wind is knowing that the APPARENT wind is at a particular angle, and knowing wind and boat speed. It is not so easy for the helmsman of a fast multihull who can only steer by the wave formation if it is fairly regular. It is quite easy to get completely dis-orientated even when in sight of land. We need a very clever auto pilot on the fast surf canoe tuned boat. The helmsman needs an analogue computor too if he is ocean racing. We will have to leave that line of research to the racing men, it might cost money. As a parting thought on boat control;— The surf canoe when in trouble will lie across wind and parallel to the seas. The monohull will lie down and try to use its keel as an outrigger float. The Kon Tiki tuned multihull has no built in safety behaviour. It can crash.